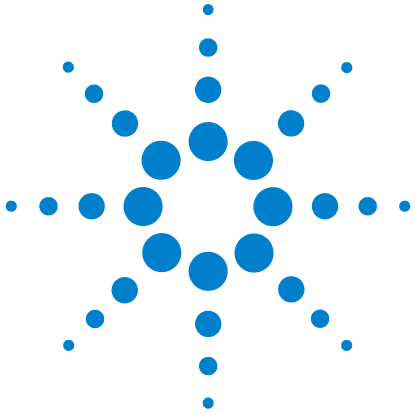

Agilent N9360A
Multi UE Tester

W-CDMA User Manual

Agilent Technologies

Notices

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Preface

Thank-you for purchasing the Agilent N9360A Wideband Code Division Multiple Access (W-CDMA) option. This option is the W-CDMA software for the N9360A Multi UE Tester.

- Before using the tester, the user is advised to read this manual carefully to ensure correct usage and also to fully utilize the tester capability.
- This manual is a reference document and the user is advised to keep it carefully for future reference.
- The manual includes the characteristics of W-CDMA, the tester operation, test procedures and screen references.
- Refer to the *N9360A Multi UE Tester Installation Guide* for information regarding installation and details of the tester. Refer also to the *N9360A GSM Option User Manual* for information about the test functions of Global System for Mobile communication (GSM) and the *N9360A cdma2000 Option User Manual* for information about the test functions of Code Division Multiple Access (cdma2000).

Notation

The following notations are used in this manual:

- **Softkey** : indicates a softkey;
- [Screen Name] : indicates a screen name;
- Tester/tester : indicates the N9360A Multi UE Tester.

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Manufacturer's Name: Agilent Technologies Microwave Products (M) Sdn. Bhd
Manufacturer's Address: Bayan Lepas Free Industrial Zone,
11900, Bayan Lepas, Penang, Malaysia

Declares under sole responsibility that the product as originally delivered

Product Name: Multi UE Tester
Models Number: N9360A-134, N9360A-135 (GS8210)
Product Options: This declaration covers all options of the above product(s)

complies with the essential requirements of the following applicable European Directives, and carries the CE marking accordingly:

Low Voltage Directive (2006/95/EC)
EMC Directive (2004/108/EC)

and conforms with the following product standards:

EMC

Standard	Limit
IEC 61326:2002 / EN 61326:1997+A1:1998+A2:2001+A3:2003	
CISPR 11:1990 / EN55011:1990	Class A Group 1
IEC 61000-4-2:1995 / EN 61000-4-2:1995	4 kV CD, 8 kV AD
IEC 61000-4-3:1995 / EN 61000-4-3:1996	3 V/m, 80-1000 MHz
IEC 61000-4-4:1995 / EN 61000-4-4:1995	0.5 kV signal lines, 1 kV power lines
IEC 61000-4-5:1995 / EN 61000-4-5:1995	0.5 kV line-line, 1 kV line-ground
IEC 61000-4-6:1996 / EN 61000-4-6:1996	3 V, 0.15-80 MHz
IEC 61000-4-11:1994 / EN 61000-4-11:1994	1 cycle / 100%

Canada: ICES-001:2004
Australia/New Zealand: AS/NZS CISPR11:2004

The product was tested in a typical configuration with Agilent Technologies test systems.

Safety

IEC 61010-1:2001 / EN 61010-1:2001
Canada: CAN/CSA-C22.2 No. 61010-1-04
USA: ANSI/UL 61010-1:2004

c SP® US
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20-Jun-2008
Date

Tay Eng Su
Quality Manager

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Template: A5971-5302-2, Rev. E N9360A_134_ 135 DoC Revision 1.0

Product Regulations

EMC

	Performance Criteria
IEC 61326-1:2002 / EN 61326-1:1997+A1:1998+A2:2001+A3:2003	
CISPR 11:1990 / EN 55011:1990 – Group 1 Class A	
IEC 61000-4-2:1995 / EN 61000-4-2:1995 (ESD 4kV CD, 8kV AD)	B
IEC 61000-4-3:1995 / EN 61000-4-3:1996 (3V/m, 80% AM)	A
IEC 61000-4-4:1995 / EN 61000-4-4:1995 (EFT 0.5kV line-line, 1kV line-earth)	A
IEC 61000-4-5:1995 / EN 61000-4-5:1995 (Surge 0.5kV line-line, 1kV line-earth)	A
IEC 61000-4-6:1996 / EN 61000-4-6:1996 (3V, 0.15~80 MHz, 80% AM, power line)	A
IEC 61000-4-11:1994 / EN 61000-4-11:1994 (Dips 1 cycle, 100%)	A
Canada: ICES-001:2004	
Australia/New Zealand: AS/NZS CISPR11:2004	

Safety IEC 61010-1:2001 / EN 61010-1:2001
Canada: CAN/CSA-C22.2 No. 61010-1-04
USA: ANSI/UL 61010-1:2004

Additional Information:

The product herewith complies with the essential requirements of the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC and carries the CE Marking accordingly (European Union).

[1]Performance Criteria:

A Pass - Normal operation, no effect.
B Pass - Temporary degradation, self recoverable.
C Pass - Temporary degradation, operator intervention required.
D Fail - Not recoverable, component damage.
N/A – Not applicable

Notes:

Regulatory Information for Canada

ICES/NMB-001:2004
This ISM device complies with Canadian ICES-001.
Cet appareil ISM est confomre à la norme NMB-001 du Canada.

Regulatory Information for Australia/New Zealand

This ISM device complies with Australian/New Zealand AS/NZS CISPR11:2004

N10149

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Legal Information

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Any adjustment, maintenance, or repair of this product must be performed by qualified personnel. Contact your customer engineer through your local Agilent Technologies Service Center.

Agilent On The Web

You can find information about technical and professional services, product support, and equipment repair and service on the Web: **http://www.agilent.com/**

Double-click the link to **Test & Measurement**. Select your country from the drop-down menus. The Web page that appears next has contact information specific for your country

Agilent By Phone

If you do not have access to the Internet, call one of the numbers in **Table 1-1**.

Table 1-1 Agilent Call Centers and Regional Headquarters

United States and Canada:	Test and Measurement Call Center (800) 452 4844 (toll-free in US)
Europe:	(41 22) 780 8111
Japan:	Measurement Assistance Center (81) 0426 56 7832
Latin America:	305 269 7548
Asia-Pacific:	(85 22) 599 7777

Manufacturing Address

Agilent Technologies Microwave Products (Malaysia) Sdn. Bhd.

Bayan Lepas Free Industrial Zone,

11900 Penang,

Malaysia.

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2
Caution and Safety Requirements

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Safety Information

Safety Summary

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Agilent Technologies, Inc. assumes no liability for the customer's failure to comply with these requirements.

Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like, that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Warning Label

A warning label is stuck on the front panel of the Tester.

Do not remove, damage or modify the warning label.

General

WARNING **The protection provided by the N9360A Tester may be impaired if the tester is used in a manner not specified by Agilent or the instructions on the display are not followed.**

WARNING **DO NOT INSTRUMENT COVERS. Operating personnel must not remove any instrument covers. Component replacement and internal adjustments must be made only by qualified service personnel. Products that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by a qualified service personnel.**

When Operating The Tester

CAUTION Make sure that the input signal level does not exceed the maximum level allowed. Tester failure may result otherwise.

CAUTION Do not turn off the Line switch on the rear panel of the Tester while the LINE LED on the front panel of the Tester is lit in green. Otherwise, Tester failure may occur.

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3 Overview

Functions 3-2
Features 3-4
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Options 3-6
Accessories 3-7

This chapter outlines the feature of the N9360A W-CDMA Option. For functions of the GSM Option, refer to the *N9360A GSM Option User Manual*, and for functions of the cdma2000 Option, refer to the *N9360A cdma2000 Option User Manual*.

W-CDMA Option provides the software for the N9360A Multi UE Tester to support signaling tests and RF performance tests in inspection processes for production, service, repair and maintenance.

This option supports Band 1 and Band 6. Agilent has also planned to provide options for Band 2 to Band 5.

The W-CDMA option allows the tester to carry out radio performance tests with call processes. In addition, it implements TX Analyzer function to execute RF radio performance tests without call processes and Signal Generator function used for adjusting radio parts.

Functions

The functions available with the W-CDMA options are listed in Table 3-1.

Table 3-1 W-CDMA Functions

Function	Description	
W-CDMA (Option)	Band: 1, 6	
	Signalling Test	
	W-CDMA	
		Location update
		MS Call
		Talk
		MS Release
		BS Call (AMR) Talk
		BS Release
		BS Call (RMC)
		BS Call (HSDPA) (Option W06)
		RF Test BS Release
	SMS	SMS MT, SMS MO
	RF Test	
		Open Loop Power Control (Open Loop TX Power)

Table 3-1 W-CDMA Functions (continued)

Function	Description		
W-CDMA (Option)		Inner Loop Power Control	
			ILP (Down Min)
			ILP (Down Max)
			ILP (Up Min)
			ILP (Up Max)
			ILP (10 slots Down)
			ILP (10 slots Up)
		Maximum Output Power (MAX TX Power)	
		Frequency Error	
		Error Vector Magnitude (EVM)	
		Origin Offset	
		Reference Sensitivity Level (Sensitivity/BER)	
		ACLR DSB 5MHz	
		ACLR DSB 10MHz	
		OBW	
	TX Analyzer		
	Signal Generator		
Remote Control	Ethernet GP-IB (Option E00 or Option E02) Serial (Option E01)		

Features

1 Easy-to-operate Automatic Test

The tests from call processes to radio performance tests are executed automatically with easy operation. Each test item in Automatic Test can be set to either On or Off. Testing time can be shortened by setting unnecessary test items to Off.

2 Shortening of testing time

In Automatic Test, tests are executed while preset traffic channels are automatically handed over. Consequently, retesting for each traffic channel is not required, and testing time can be shortened.

3 Various test functions

This product can meet the needs in every inspection process with Manual Test and Signal Generator function.

4 Extensive interfaces

Ethernet, USB, GP-IB (Option E00) and Serial (Option E01) are prepared. The USB ports are used to connect a printer, a USB-GPIB converter (Option E02) or a USB memory device for firmware update, saving and recalling Test Setup files, or saving screen images. Ethernet, GP-IB and Serial are used for remote control.

5 External control function (Remote control)

Remote control is available using Ethernet, GP-IB (Option E00 or Option E02) or Serial (Option E01). Each communication port uses same commands. A communication port which adapts to user's equipment is selectable.

6 System Handover to GSM

System Handover from W-CDMA to GSM (Option) can be executed. This function is available for both Automatic Test and Manual Test.

Configuration

The W-CDMA software comes ready installed in the tester when the user purchases the W-CDMA option.

This manual also accompanies the W-CDMA option.

Table 3-2 Configuration

Item name	Type	Quantity	Remarks
W-CDMA Standard	W00	1	Installed on the Tester
User Manual	N9360A-90701	1	Containes in the CD-R (Type: N9360-90003)
Programming Manual	N9360A-90703	1	
Quick Reference	N9360A-90002	1	
Installation Guide	N9360A-90001	1	
Certificate of Calibration	—	1	
GP-IB Port	E00	IEEE, 24 pin Connector (Amphenol)	GP-IB Port
Serial Port	E01	D-sub 9 pin male Connector	Serial Port
HSDPA Option	W06	HSDPA function	HSDPA Option
ACLR/OBW Measurement Option	W07		

Options

Table 3-3 shows the options of the Tester. For the specification of the options, contact the Agilent Sales or an approved distributor.

Table 3-3 Options

Item Name	Type	Remarks
GP-IB	E00	IEEE488, 24 pin Connector (Amphenol) Serial PortE01D-sub 9 pin male Connector
USB-GPIB Converter	E02	Use USB interface. IEEE488, 24 pin Connector (Amphenol)
HSDPA Option	W06	
ACLR/OBW Measurement Option	W07	

Accessories

Table 3-4 shows the accessories provided with the Tester. For the specification of the accessories, contact the Agilent Sales or an approved distributor.

Table 3-4 Accessories

Item Name	Type	Remarks
TEST USIM card	—	
Antenna coupler	N9360A-A02	Frequency Range: 824 to 1990 MHz Coupling Factor: 15 dB (at 824 to 960 MHz) 13 dB (at 1710 to 1880 MHz) 11 dB (at1880 to 1990 MHz)

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4
Operating Procedures

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- Installing The Test USIM 4-4
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Ending A Test 4-77
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- Turning off the Tester at the End of Test 4-77

This chapter describes the preparations required and the operating procedures before starting the test of a W-CDMA Mobile Phone. For the testing method of a GSM Mobile Phone, refer to the *N9360A GSM Option User Manual*, and for the testing method of a cdma2000 Mobile Phone, refer to the *N9360A cdma2000 Option User Manual*.

Test Flow

Figure 4-1 shows the flow of the test operation to check the mobile phone with the N9360A W-CDMA option.

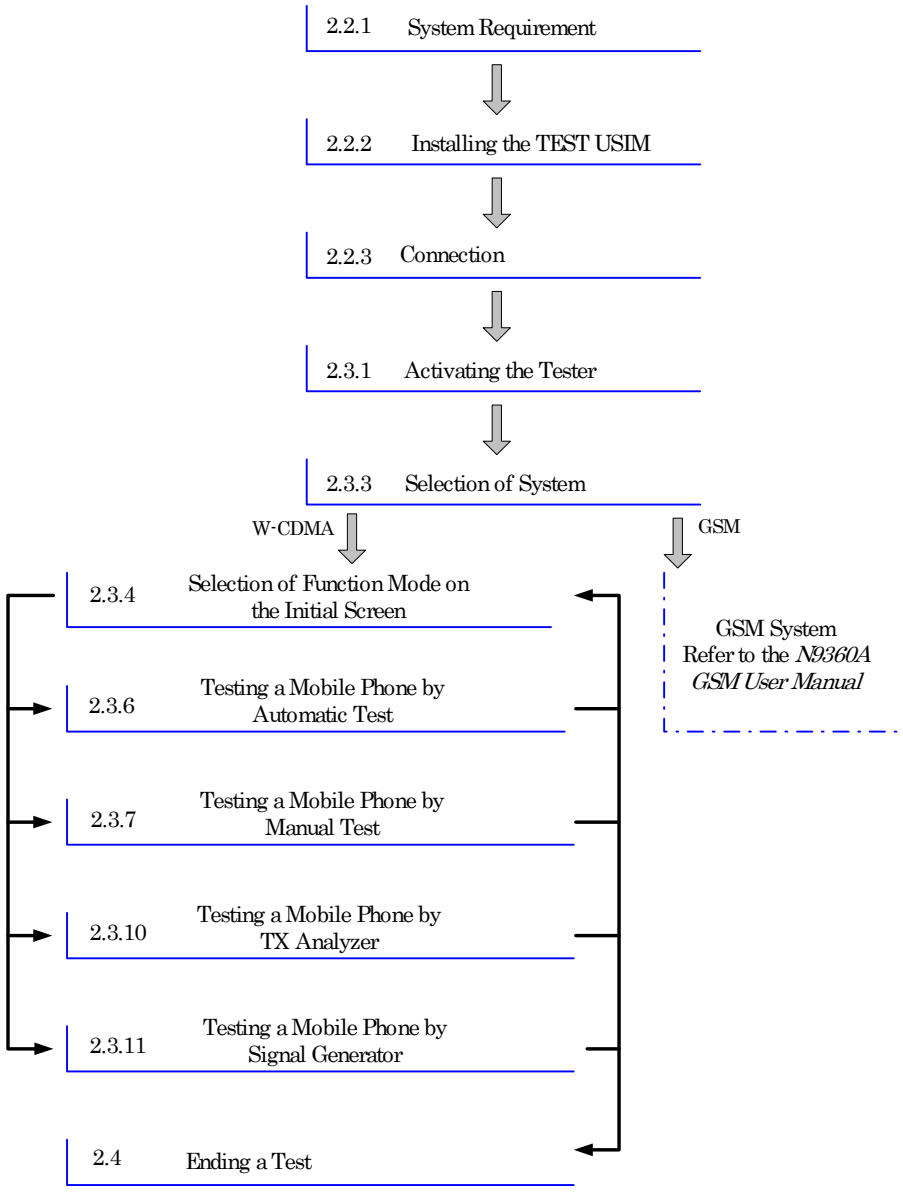

2.2.1 System Requirement
2.2.2 Installing the TEST USIM
2.2.3 Connection
2.3.1 Activating the Tester
2.3.3 Selection of System
W-CDMA
GSM
2.3.4 Selection of Function Mode on the Initial Screen
GSM System
Refer to the N9360A
GSM User Manual
2.3.6 Testing a Mobile Phone by Automatic Test
2.3.7 Testing a Mobile Phone by Manual Test
2.3.10 Testing a Mobile Phone by TX Analyzer
2.3.11 Testing a Mobile Phone by Signal Generator
2.4 Ending a Test

Figure 4-1 Test Operation Flow

Test Preparation

CAUTION Make sure that the input signal level does not exceed the maximum level allowed. Otherwise, Tester failure may occur.

The following procedures are require before proceeding with any test:

System Requirements

- The following equipment are required to setup the test system:
- The Agilent N9360A Multi UE Tester.
- An RF cable, RF antenna coupler (type N9360A-A02) or shield case (part number type N9360A-S01) to connect RF signals to the mobile phone under test.
- A printer and a printer cable if required.

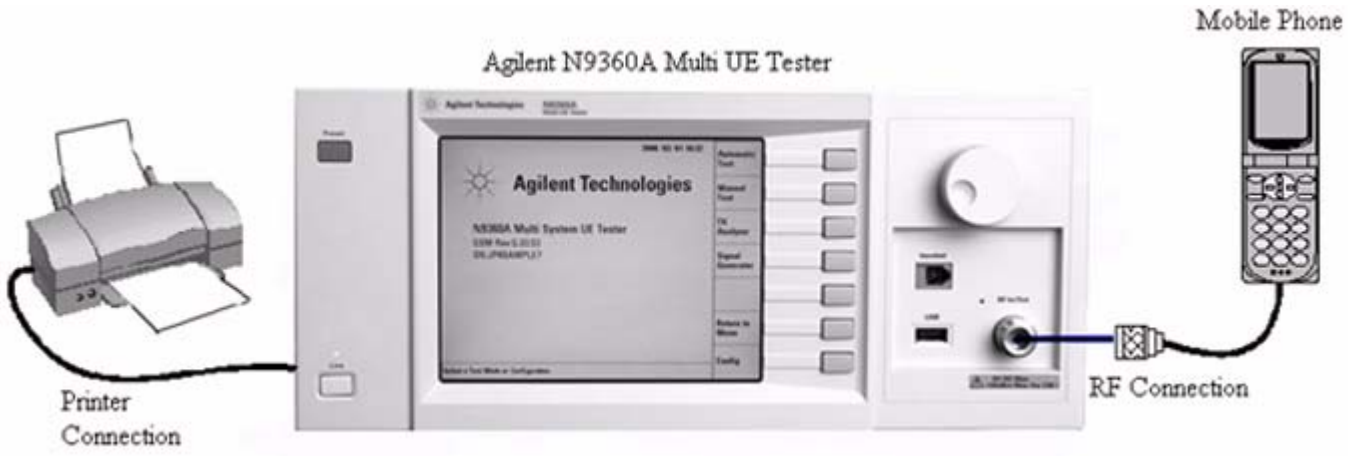


Figure 4-2 Typical Test Setup

Installing The Test USIM

Insert the TEST Universal Subscriber Identity Module (USIM) provided by Agilent in the mobile phone before performing any test. This is because the Tester will not be able to perform measurements with a USIM provided by the cell phone operator or other test USIMs.

Connections

Connecting Mobile Phone

Connect the mobile phone to the Tester using any of the following methods.

Using the Antenna Coupler

Connect the Antenna Coupler (type N9360A-A02) connector to the RF IN/OUT connector on the front panel of the Tester. Insert the antenna of the mobile phone into the hole of the Antenna Coupler as deep as possible.

Using a User-Supplied RF Cable

If you have a cable which connects between the RF port of the mobile phone and the RF IN/OUT connector of the Tester, use it instead of the Antenna Coupler.

Using the Shield Case

Connect the ANTENNA COUPLER IN/OUT connector of the shield case (type N9360A-S01) to the RF IN/OUT connector on the front panel of the Tester. Place the mobile phone on the antenna coupler board inside the shield case using the horizontal and vertical holders.

Connecting a Printer

Agilent recommends the EPSON PM-G800 for use with the N9360A tester.

To print screen hard copies, connect the printer to the Tester as shown in Figure 4-3 using an appropriate interface cable between the USB Connector on the rear panel of the Tester and the USB interface connector of the printer. Refer to the printer manual for the various printer operating mode.

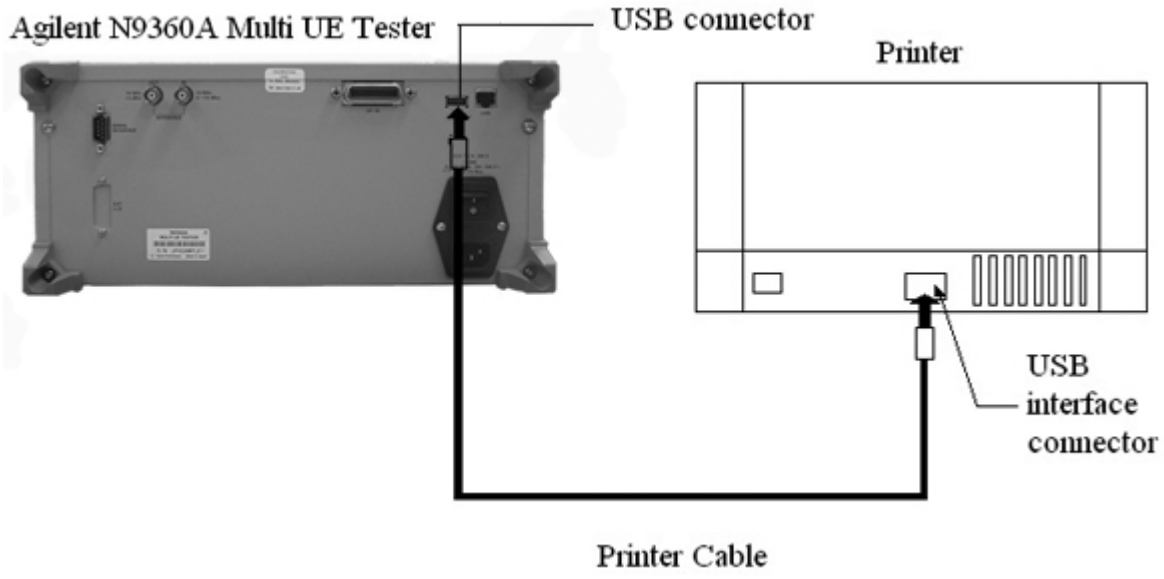


Figure 4-3 Printer Connection

USB Memory Device

To save screen images into a USB memory device, insert the USB memory device to the USB connector on the front panel of the Tester. The images are saved in Portable Network Graphics (PNG) format and with a file name: COPY and the number from 00 to 99 which automatically increases.

Connecting a USB-GPIB Converter

When you control the Tester using a GP-IB interface, use the USB-GPIB converter (Option E02). Connect the USB-GPIB converter and the USB connector on the rear panel of the Tester with a USB cable.

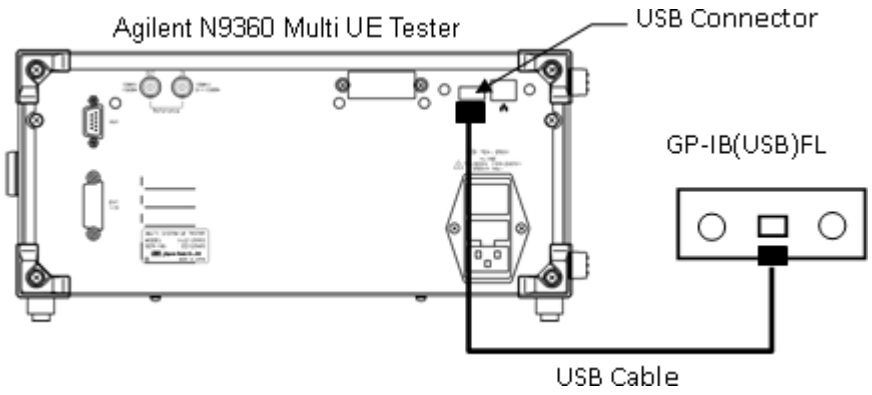


Figure 4-4 Connecting a USB-GPIB Converter

Test Procedure

Activating the Tester

To activate the Tester, turn on the LINE switch on the rear panel of the Tester and press the LINE switch on the front panel.

NOTE Provide warm up of 30 minutes or more to ensure correct measurement.

General Operation

Display Annotation

There are several types of screen used in testing, depending on the functions and test situations.

Figure 4-5 shows the common areas on a typical screen.

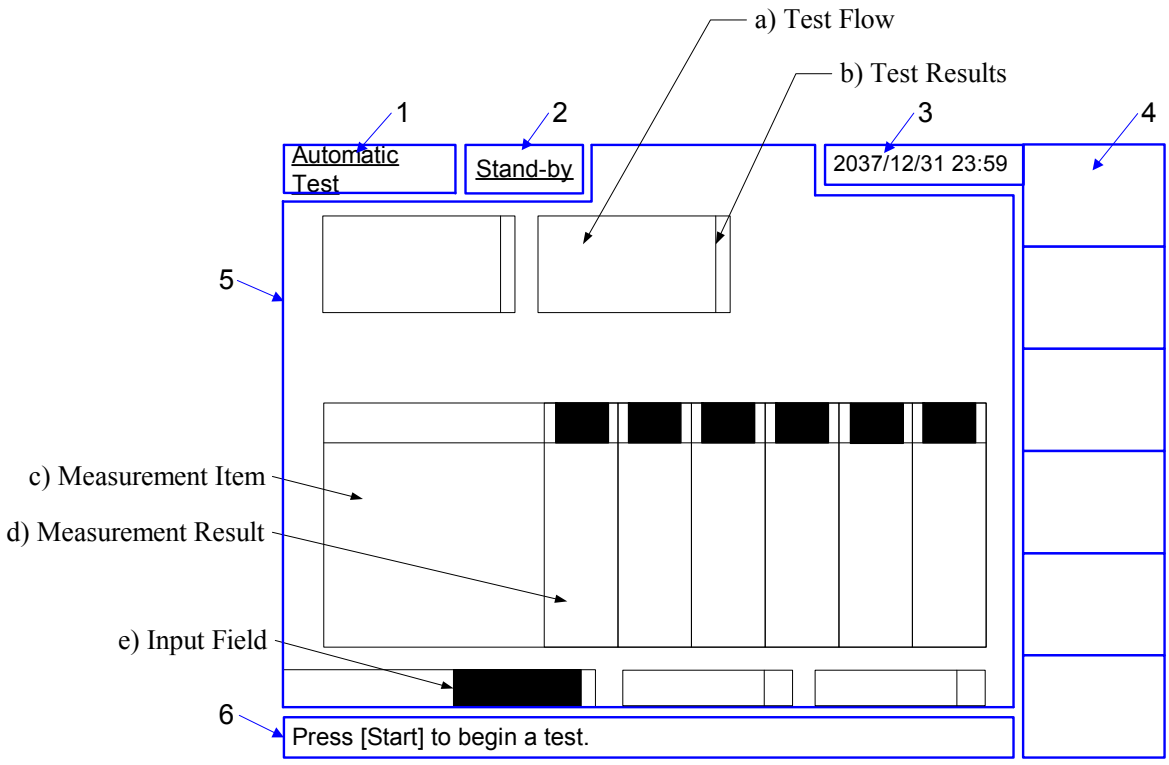


Figure 4-5 Screen Display Annotation

Table 4-1 Description of Screen Display Annotation

No.	Name	Description
1	Function Mode Field	The current function mode, for example, Automatic Test, Manual Test, TX Analyzer and Configuration, is displayed in this field.
2	Status Display Field	The current operation status, for example, Stand-by, Measuring, Test Sequence and Test Condition, is displayed in this field.
3	Date/Time Field	The current date and time are displayed in this field.
4	Softkey Menu Field	The softkey labels are displayed in this field. Each label defines the function of the corresponding softkey immediately next to the right of the label.
5	Screen Field	A variety of information is displayed in this field depending on the operation status. For example, in Automatic Test, the following information is displayed in this field. a) Test flow: Location Update, MS Call, BS Call, etc. b) Test results: P (pass) or F (fail). c) Measurement items: Peak TX Power, Frequency Error, etc. d) Measurement results: Pass/Fail or values. e) Input field: Highlighted fields.
6	Message Field	Operation message for test flow steps are displayed in this field. In this field, the word surrounded by bracket "[]" denotes the softkey.

Selecting Items and Changing Parameters

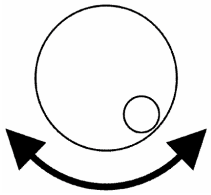
Depending on the function modes, the Tester has a number of input fields to be specified or defined to configure a test flow, test sequence and test condition. The allowable ranges for those input fields depending on the radio systems are explained in the following parts of this guide. Summarized information is described in “Appendix A Input Fields and Allowable Choices or Ranges" on page A-1.

Selecting an Input Field and Specifying a Value

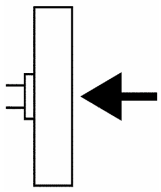
All input fields to be specified are highlighted and the circular cursor is shown next to an input field.

To specify a value, select an input field and then specify a value to the input field by the following procedure:

1. Rotate the CURSOR CONTROL knob clockwise to move the cursor downward or right, or rotate it counterclockwise to move it upward or left, and place it next to the input field you want to change.



2. Press the CURSOR CONTROL knob once. The highlighted input field changes to normal display and circular cursor changes to a triangular one.



3. Rotate the CURSOR CONTROL knob clockwise or counterclockwise to find the values defined for it.
4. Press the CURSOR CONTROL knob to enter the desired value in the input field. The input field is highlighted again and the triangular cursor returns to the circular one.

Storing Numeric Values

For numeric input fields such as channel numbers and relevancies of amplitude, the user can store up to four numeric values into the memory softkey menus with the following procedure:

1. Move the cursor to one of the numeric input fields of channels or relevancies of amplitude.
2. Press the CURSOR CONTROL knob to select the field. The softkey menu as Figure 4-6 is displayed on the screen. The memory softkeys show the values previously stored in the memories if any.

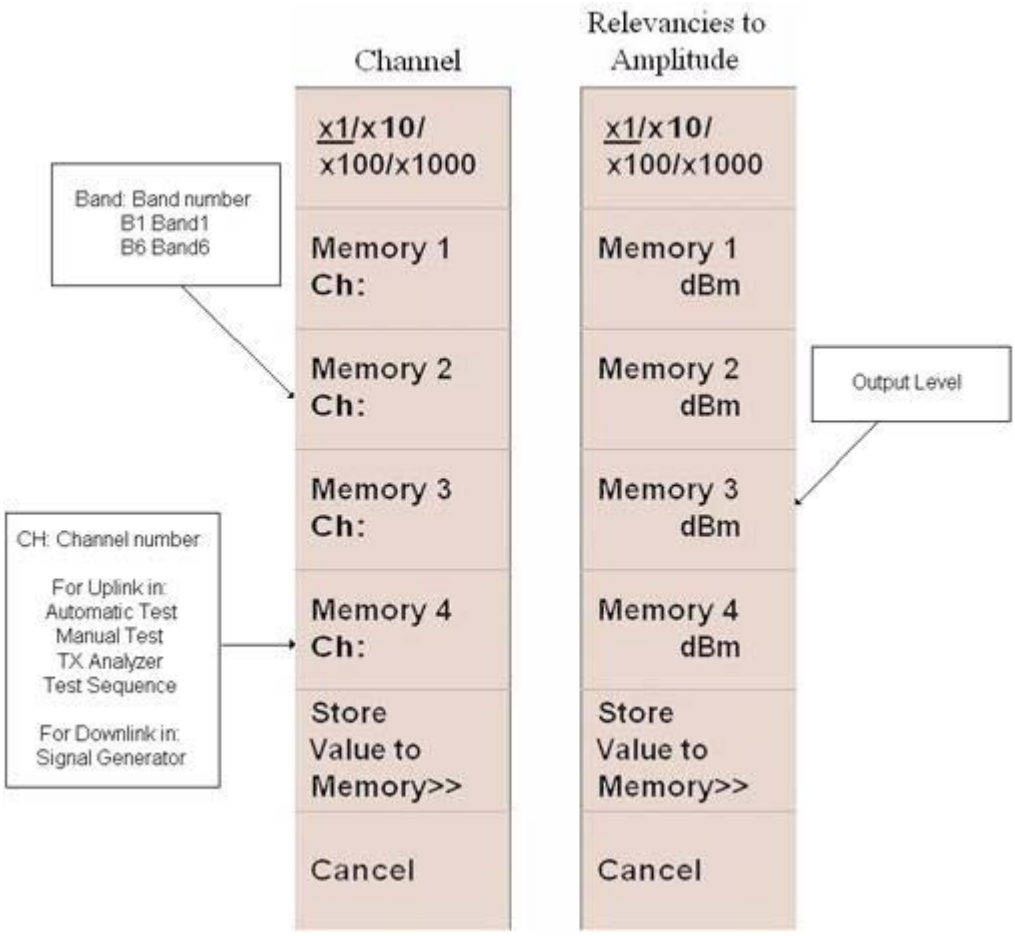


Figure 4-6 Softkeys for Storing Values

3. Set a numeric value in the input field with the CURSOR CONTROL knob.

4 Press the **Store Value to Memory>>** softkey. The softkey menu including **Memory 1**, **Memory 2**, **Memory 3** and **Memory 4** softkeys as Figure 4-7 is displayed.

Figure 4-7 Memory Softkeys

5 Press any of the memory softkeys from **Memory** 1 to **Memory 4** where you desire to store that value.

6 The memory softkey menu returns to the state in step 2 showing the value newly stored.

7 Press the CURSOR CONTROL knob to set the value into the field. The softkey menu returns to that of step 1.

8 Repeat the procedure from step 1 to step 7, if required.

Recalling Numeric Values

1 Move the cursor to one of the numeric input fields of channels or relevancies of amplitude.

2 Press the CURSOR CONTROL knob to select the field. The softkey menu as Figure 4-8 is displayed on the screen. The four memory softkeys show the values previously stored in the memories if any.

Figure 4-8 Softkeys for Storing Values

3 Press **Memory 1**, **Memory 2**, **Memory 3** or **Memory 4** softkey to enter the stored value to the field.

4 The value is entered to the field.

5 Press the CURSOR CONTROL knob to return the softkey menu to that of Step 1.
If the value storage softkey where any value is not registered is pressed at the input field of RFCH 2, 3, 4, 5 or 6 on the [Auto Test] screen or the [Configuration: Test Sequence] screen, "----" is displayed at the input field. For other input fields, the value displayed in the input field does not change even if the value storage softkey without registered value is pressed there.

Changing Magnification Softkey

Press the CURSOR CONTROL knob to select a numeric input field, such as channels and relevancies of amplitude. A changing magnification softkey as Figure 4-9 is displayed with memory softkeys. A selected magnification is underlined.

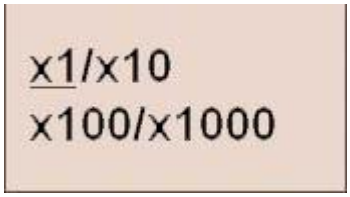


Figure 4-9 Magnification Softkey

Pressing this softkey changes the multiplier from 1 to 1000. Rotating the CURSOR CONTROL knob clockwise changes the numeric value in the input field by an increment, and counterclockwise changes the value by a decrement. The following multiplies are variable.

- x1: Increment/decrement by 1,
- x10: Increment/decrement by 10,
- x100: Increment/decrement by 100,
- x1000: Increment/decrement by 1000.

System Selection

On this screen, select a system from GSM, W-CDMA or cdma2000.

NOTE This guide describes only the W-CDMA system. For GSM system and cdma2000 system, please refer to the *GSM User Manual* and the *cdma2000 User Manual.*

1 Turn on the Tester. The [Top Menu] screen is displayed as Figure 4-10.

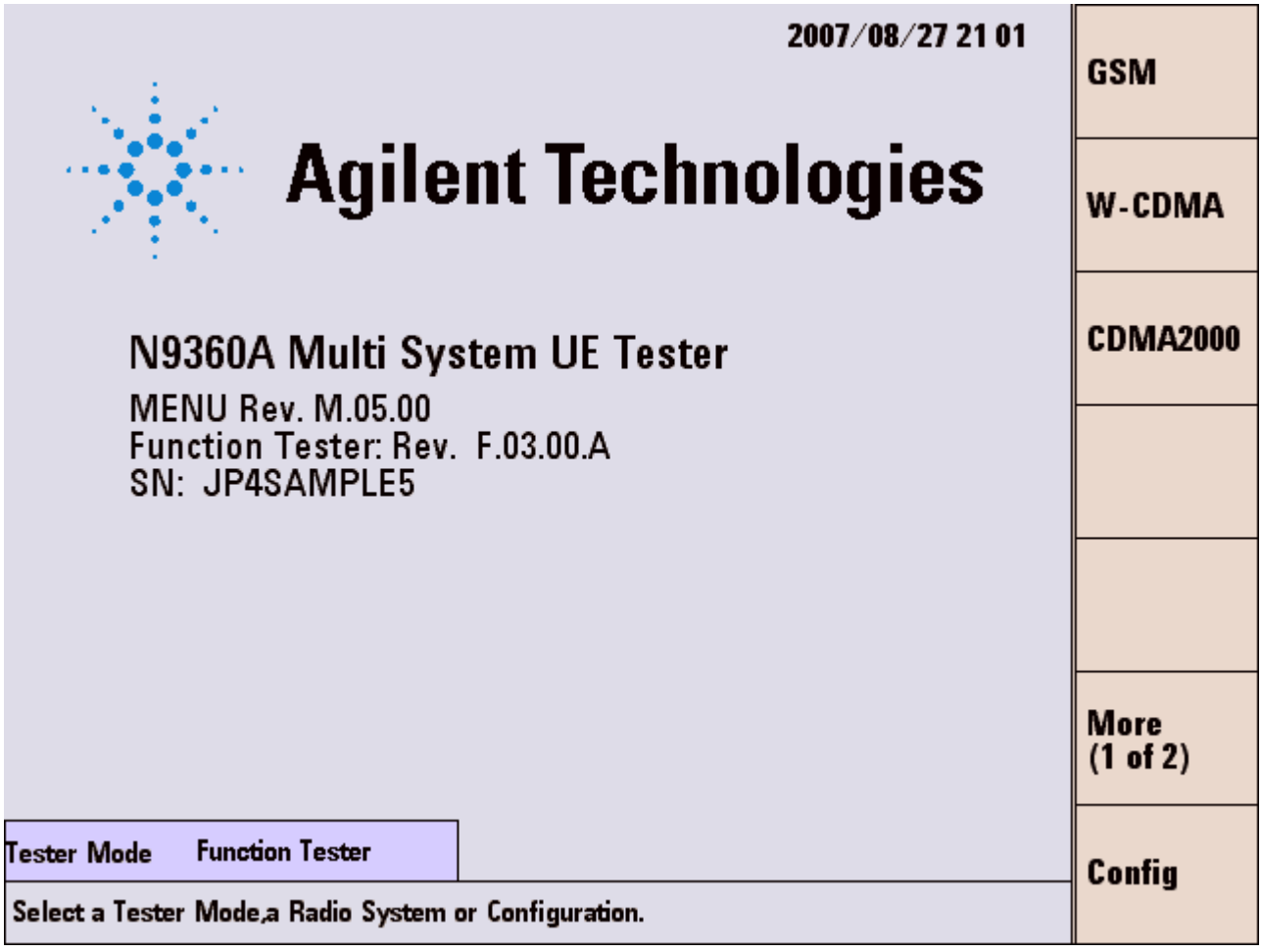


Figure 4-10 Top Menu

2 Press the **W-CDMA** softkey to select the W-CDMA system. The [Initial] screen for W-CDMA is displayed after the Tester completes its initialization and self-test routine.

NOTE

When the AutoBoot function is set to **FUNC GSM**, **FUNC W-CDMA** or **FUNC CDMA2000**, the Tester automatically selects the GSM, W-CDMA or cdma2000 system mode if no softkey is pressed within the specified time (10 to 60 seconds). When the Tester is shipped, the AutoBoot function is set to None. Refer to the "AutoBoot" on page 5-10 for details.

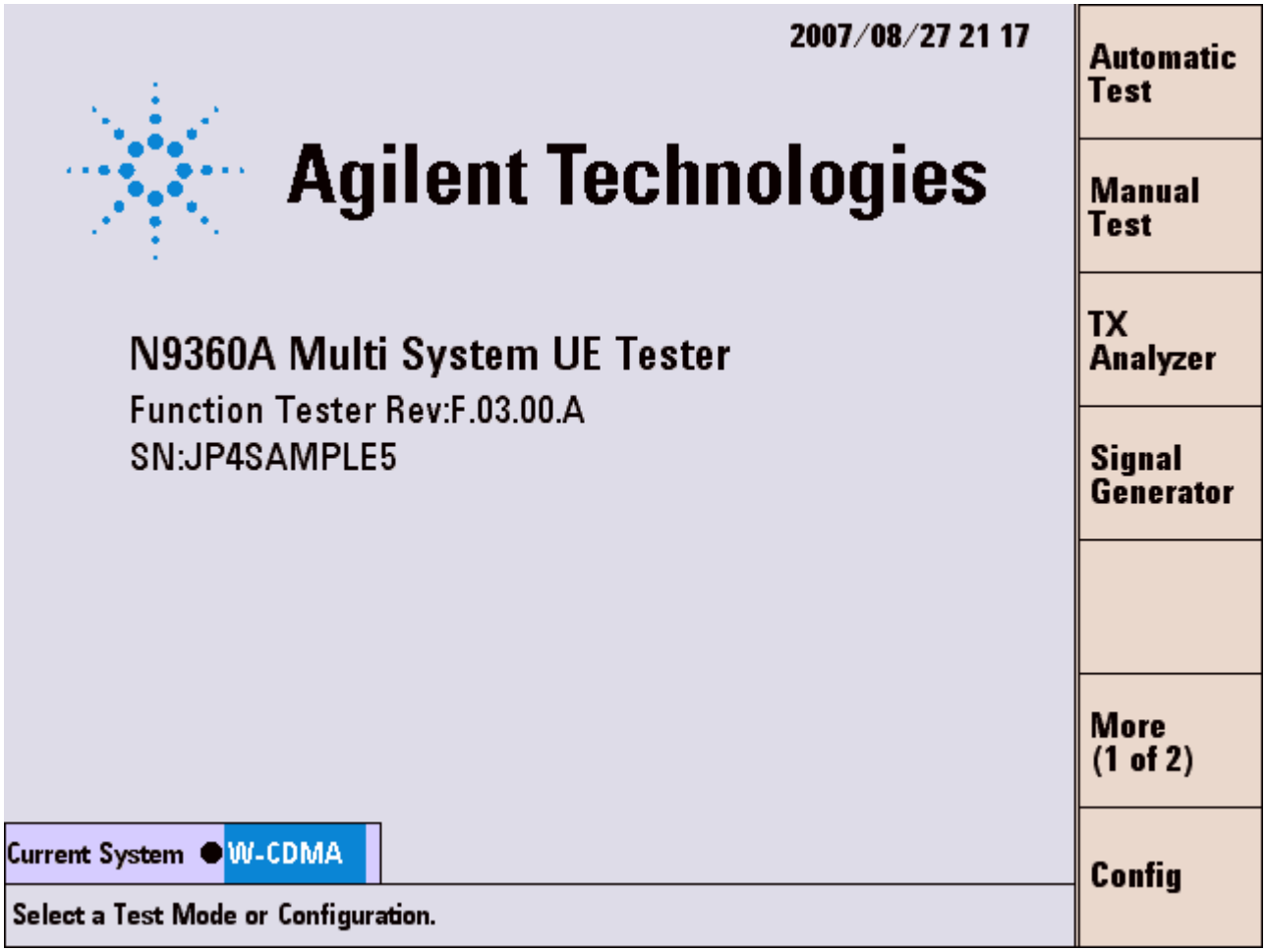


Figure 4-11 [Initial] Screen

3 Press the **Config** softkey on the [Initial] screen, and then press the **Test Condition** softkey on the [Configuration] screen. The [Configuration: Test Condition] screen as shown in Figure 4-12.

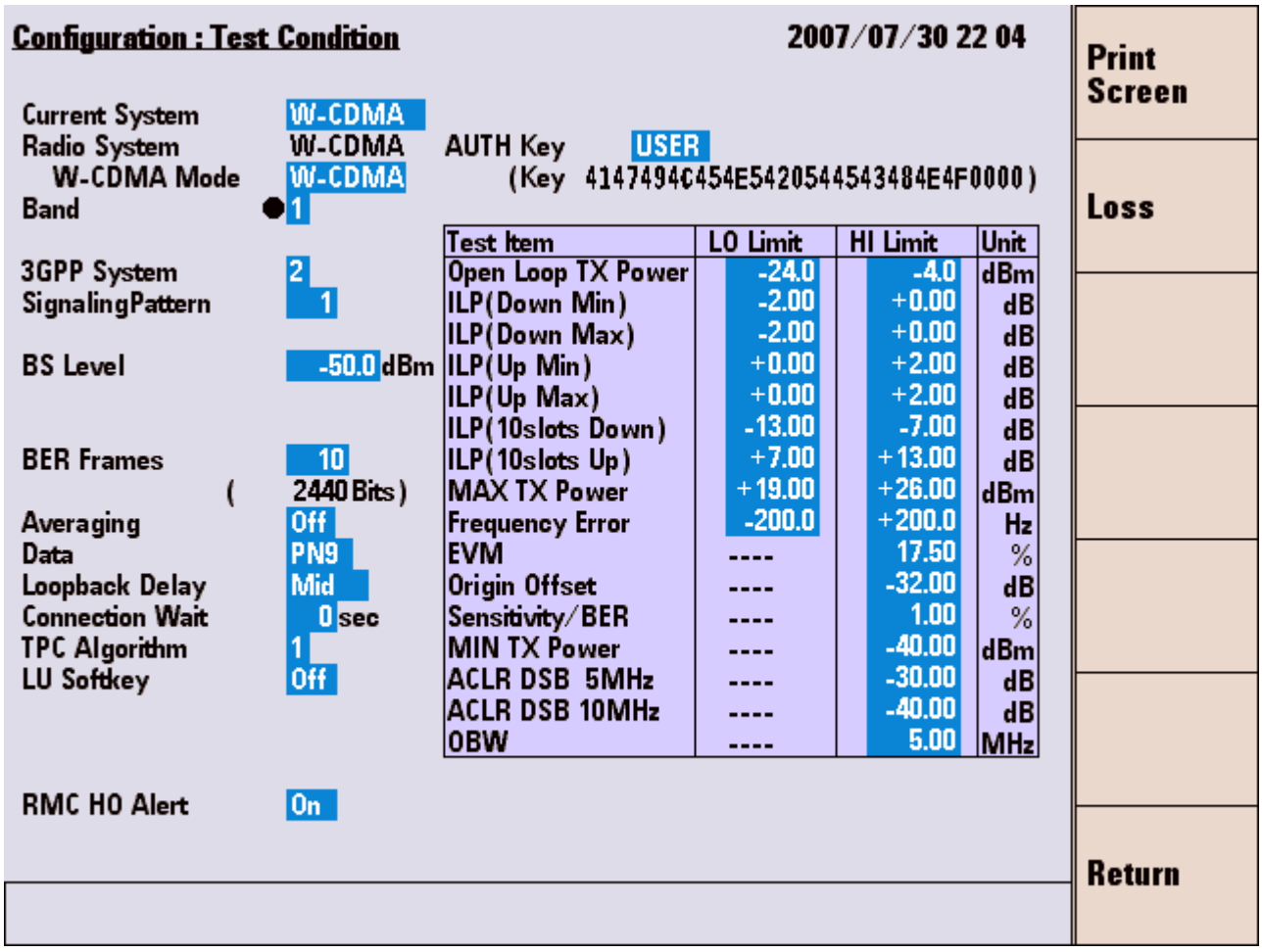

Configuration : Test Condition
2007/07/30 22 04
Current System W-CDMA
Radio System W-CDMA
W-CDMA Mode W-CDMA
Band 1
AUTH Key USER
(Key 4147494C454E5420544543484E4F0000)
3GPP System 2
SignalingPattern 1
BS Level -50.0 dBm
BER Frames 10
(2440 Bits)
Averaging Off
Data PN9
Loopback Delay Mid
Connection Wait 0 sec
TPC Algorithm 1
LU Softkey Off
RMC HO Alert On
Test Item | LO Limit | HI Limit | Unit
Open Loop TX Power | -24.0 | -4.0 | dBm
ILP(Down Min) | -2.00 | +0.00 | dB
ILP(Down Max) | -2.00 | +0.00 | dB
ILP(Up Min) | +0.00 | +2.00 | dB
ILP(Up Max) | +0.00 | +2.00 | dB
ILP(10slots Down) | -13.00 | -7.00 | dB
ILP(10slots Up) | +7.00 | +13.00 | dB
MAX TX Power | +19.00 | +26.00 | dBm
Frequency Error | -200.0 | +200.0 | Hz
EVM | ---- | 17.50 | %
Origin Offset | ---- | -32.00 | dB
Sensitivity/BER | ---- | 1.00 | %
MIN TX Power | ---- | -40.00 | dBm
ACLR DSB 5MHz | ---- | -30.00 | dB
ACLR DSB 10MHz | ---- | -40.00 | dB
OBW | ---- | 5.00 | MHz
Print Screen
Loss
Return

Figure 4-12 [Configuration: Test Condition] Screen

4 Set the “3GPP System” and “Signaling Pattern” input fields.

5 Press the **Return** softkey twice to return to the [Initial] screen.

Function Mode Selection On The [Initial] Screen

The tester executes its initialization and self-test routine after completion of system setting. The [Initial] screen is then displayed. Press one of the softkeys on the left side of the screen to select a function mode.

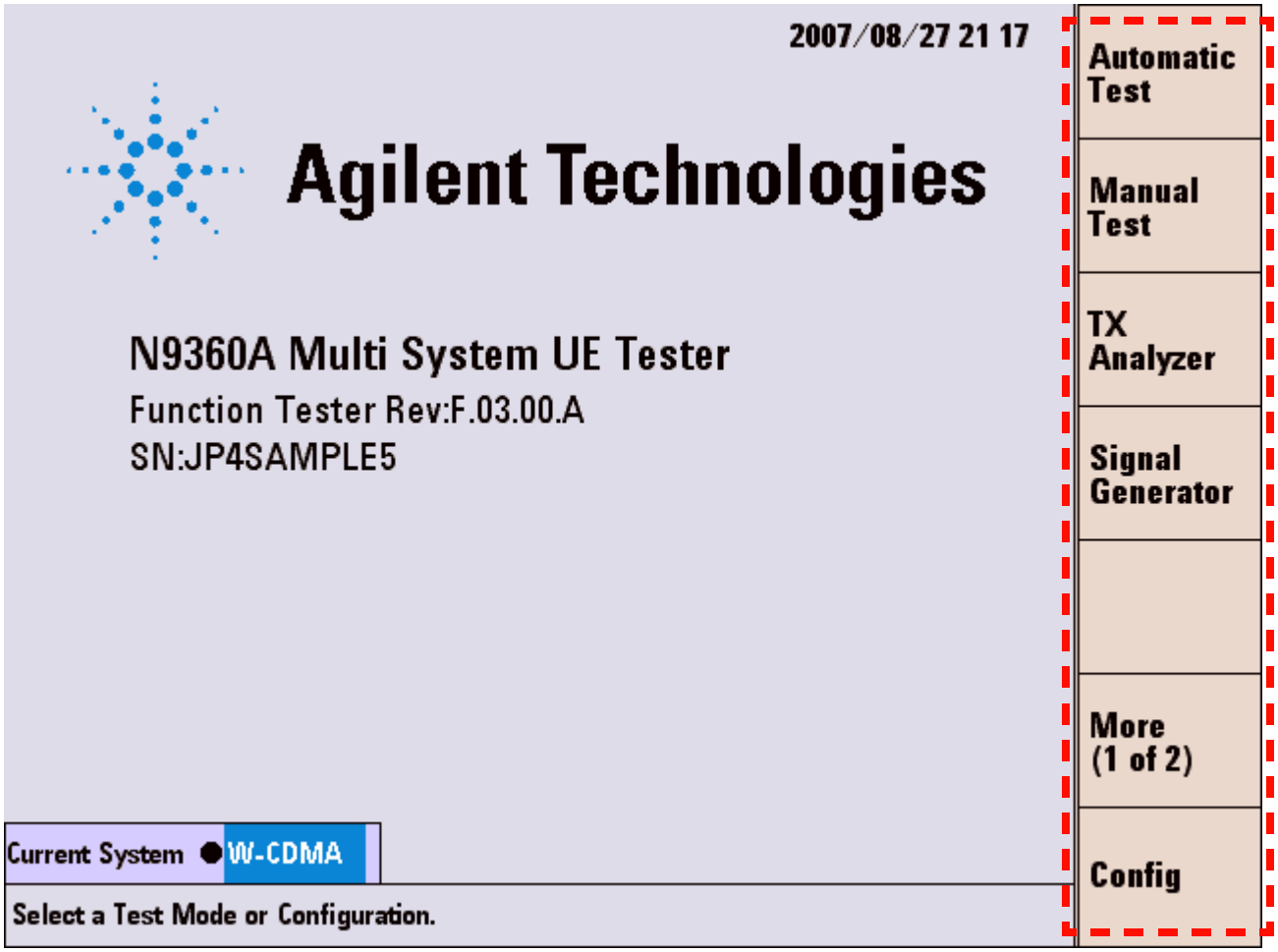


Figure 4-13 [Initial] Screen

Softkey Menu 1

- **Automatic Test**: Starts the Automatic Test. Refer to “Testing Mobile Phone Using Automatic Test" on page 4-25.
- **Manual Test**: Starts the Manual Test. Refer to “Testing Mobile Phone Using Manual Test" on page 4-37 for W-CDMA mode. Refer to “Testing a Mobile Phone by Manual Test (HSDPA Mode)" on page 4-59 for HSDPA mode.
- **TX Analyzer**: Starts the TX Analyzer test. Refer to “Testing a Mobile Phone by TX Analyzer" on page 4-67.
- **Signal Generator**: Starts a test with the Signal Generator. Refer to “Testing a Mobile Phone by Signal Generator" on page 4-73.
- **More (1 of 2)**: Displays the softkey menu 2.
- **Config**: Goes to the [Configuration] screen to set parameters. Refer to “Configuration Screen" on page 5-145.

Softkey Menu 2

- **Print Screen**: Prints the hard-copy of the screen or stores the screen image into the USB memory, according to the "Printer" setting on the [Configuration] screen.
- **Return to Menu**: This softkey is not for selecting a function mode. The screen returns to the [Top Menu] screen when this softkey is pressed. Refer to “Return to Menu Screen" on page 5-27 for detail.
- **More (2 of 2)**: Returns to the Softkey Menu 1.

RF IN/OUT Loss Correction

Actual Input/Output Level and Correction

1 **Actual Output Level and Correction in Automatic Test (Except RF test), Manual Test and Signal Generator**

The output signal of the tester is corrected for cable loss, coupling loss, etc. by properly setting the parameters described below

The actual output level (for downlink signal) at the RF IN/OUT connector in the Automatic Test mode (except RF test), the Manual Test mode and Signal Generator mode is calculated by the following equation.

OutputLevel = BsLevel + LossRfOut

Where:

OutputLevel	The actual output level at the RF IN/OUT connector.
BsLevel	The setting value at the "BS Level" field on the [Configuration: Test Condition] screen or the "Amplitude" field on the [Signal Generator] screen.
LossRfOut	The setting value at the "LOSS/RF Out" field on the [Configuration] screen.

NOTE **OutputLevel must not exceed –20.0dBm.** Therefore, care must be taken to ensure that the setting of the BsLevel and the LossRfOut does not cause the OutputLevel to exceed the –20.0 dBm limit.

2 **Actual Input Signal Level and Correction in Automatic Test (Except RF Test), Manual Test and TX Analyzer**

Input signal level of the tester (for uplink signal) is corrected for cable loss, coupling loss, etc. by properly setting the parameters described below.

The measurement results of RF test in the Manual Test mode and the TX Analyzer mode are corrected by the following equation.

InputLevel = MsLevel + LossRfIn

Where:

InputLevel	The corrected measured value of the tester.
MsLevel	The input signal level of the mobile phone at the RF IN/OUT connector.
LossRfIn	The setting value in the "LOSS/RF In" field on the [Configuration] screen.

3 Actual Output Level and Correction for RF Test in Automatic Test

The output signal level of the tester is corrected for cable loss, coupling loss, etc. by properly setting the BsLevel, LossRfOut and the AttOut parameters.

The actual output level (for downlink) at the RF IN/OUT connector for RF test in the Automatic Test mode is calculated using the following equation.

OutputLevel = BsLevel + LossRfOut + AttOut

Where:

OutputLevel	The actual output level at the RF IN/OUT connector.
BsLevel	The setting value at the "BS Level" field on the [Configuration: Test Condition] screen.
LossRfOut	The setting value at the "LOSS/RF Out" field on the [Configuration] screen.
AttOut	The setting value at the "ATT Out" field on the [Configuration: Test Sequence] screen.

NOTE

There are 2 restrictions the must be observed when setting the parameters:

1. The **OutputLevel must not exceed** –20.0 dBm. Therefore, ensure that BsLevel, the LossRfOut and AttOut are correctly set to meet this limit.
2. The sum of the LossRfOut and the AttOut parameters must be set to be greater than or equal to zero.

4 Actual Input Signal Level and Correction for RF Test in Automatic Test

The measurement results of RF test in the Automatic Test mode are corrected for cable loss, coupling loss, etc., by the following equation:

InputLevel = MsLevel + LossRfIn + AttIn

Where:

InputLevel	The corrected measured value of the tester.
MsLevel	The input signal level of the mobile phone at the RF IN/OUT connector.
LossRfIn	The setting value at the "LOSS/RF IN" field on the [Configuration] screen.
AttIn	The setting value at the "ATT In" field on the [Configuration: Test Sequence] screen.

NOTE

Restriction:

The sum of the values for LossRfIn and ATTIn must be greater than or equal to zero.

Entering Loss on the [Configuration] Screen

Determine and enter the loss values caused by the antenna coupler, RF cable or shield case used to connect the mobile phone to the Tester. If the "Loss" is set to "On", these path loss values are applied to all through the test flow for the band currently tested.

1. Press the **W-CDMA** softkey on the [Top Menu] screen to activate W-CDMA system. Refer to "System Selection" on page 4-14 for more details.
2. To set path loss value, press the Press the **Config**, **Test Condition** and **Loss** softkeys sequentially. Figure 4-14 will be displayed.

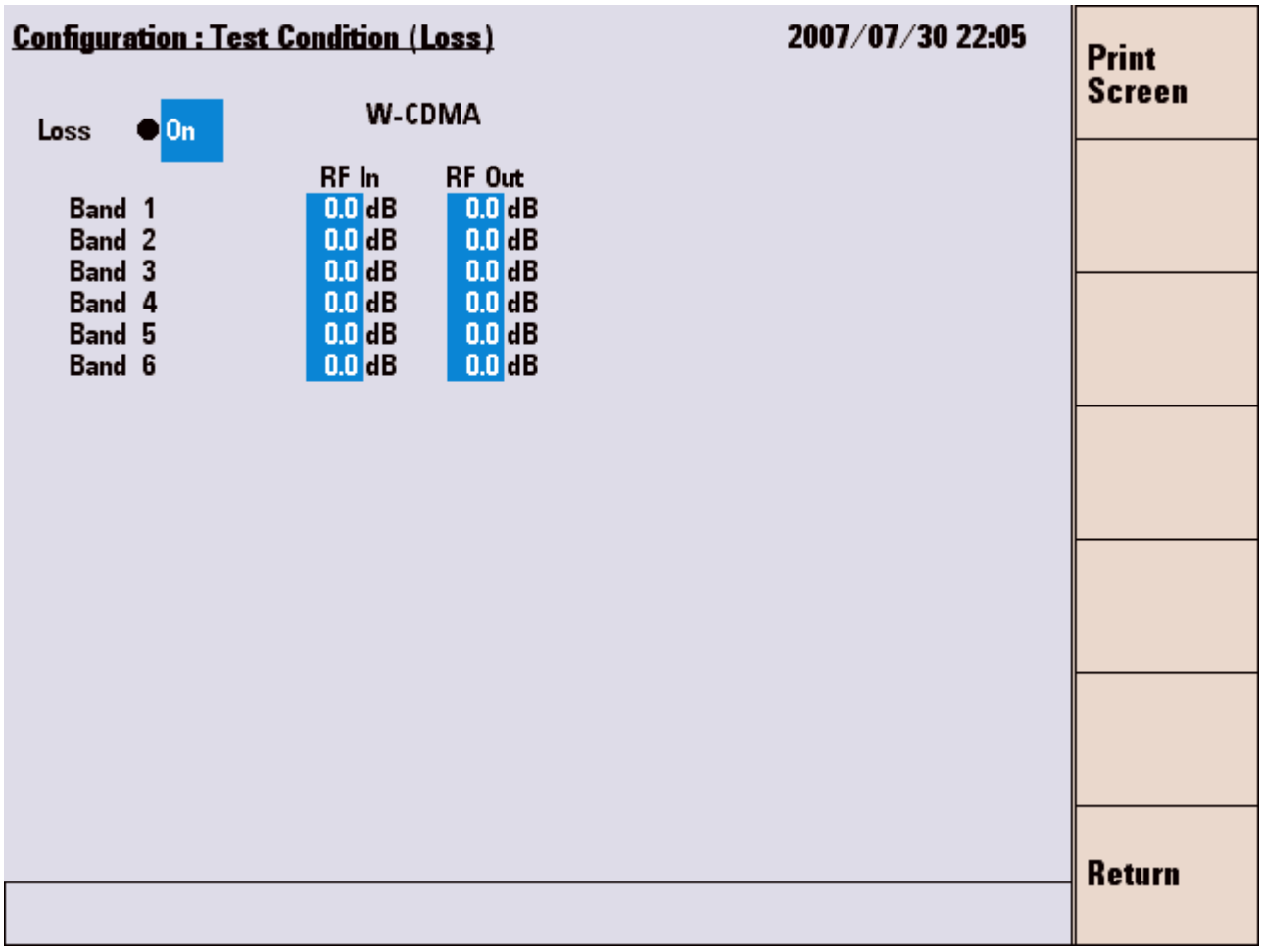


Figure 4-14 [Configuration: Test Condition (Loss)] Screen

3 Set the "Loss" field to "On" with the CURSOR CONTROL knob.

4 Enter the appropriate loss values in the "RF In" and "RF Out" fields with the CURSOR CONTROL knob. These loss values are used all through the test flow except RF tests.

5 Press the **Return** softkey to return to the [Initial] screen.

Entering Channel Attenuation on the [Configuration: Test Sequence] Screen

This section describes correction for the RF Test results in Automatic Test. Each radio frequency channel (RFCH) path loss can be set in the [Configuration: Test Sequence] screen. This is the RF test correction function in addition to the loss function in the [Configuration] screen.

As well as entering the loss values in the [Configuration] screen, the user can also enter the attenuation values to be used to correct the RF test results for each RFCH in the Automatic Test mode.

Determine and enter the appropriate attenuation values, caused by the antenna coupler, RF cable or shield case connecting the mobile phone to the tester, for each RFCH.

The following is the procedure to accomplish the above:

1. Press the **W-CDMA** softkey on the [Top Menu] screen to activate W-CDMA system. Refer to"System Selection" on page 4-14 for more details.
2. Press the **Config** softkey on the [Initial] screen and then the **Test Sequence** softkey on the [Configuration] screen to display the [Configuration: Test Sequence] screen.

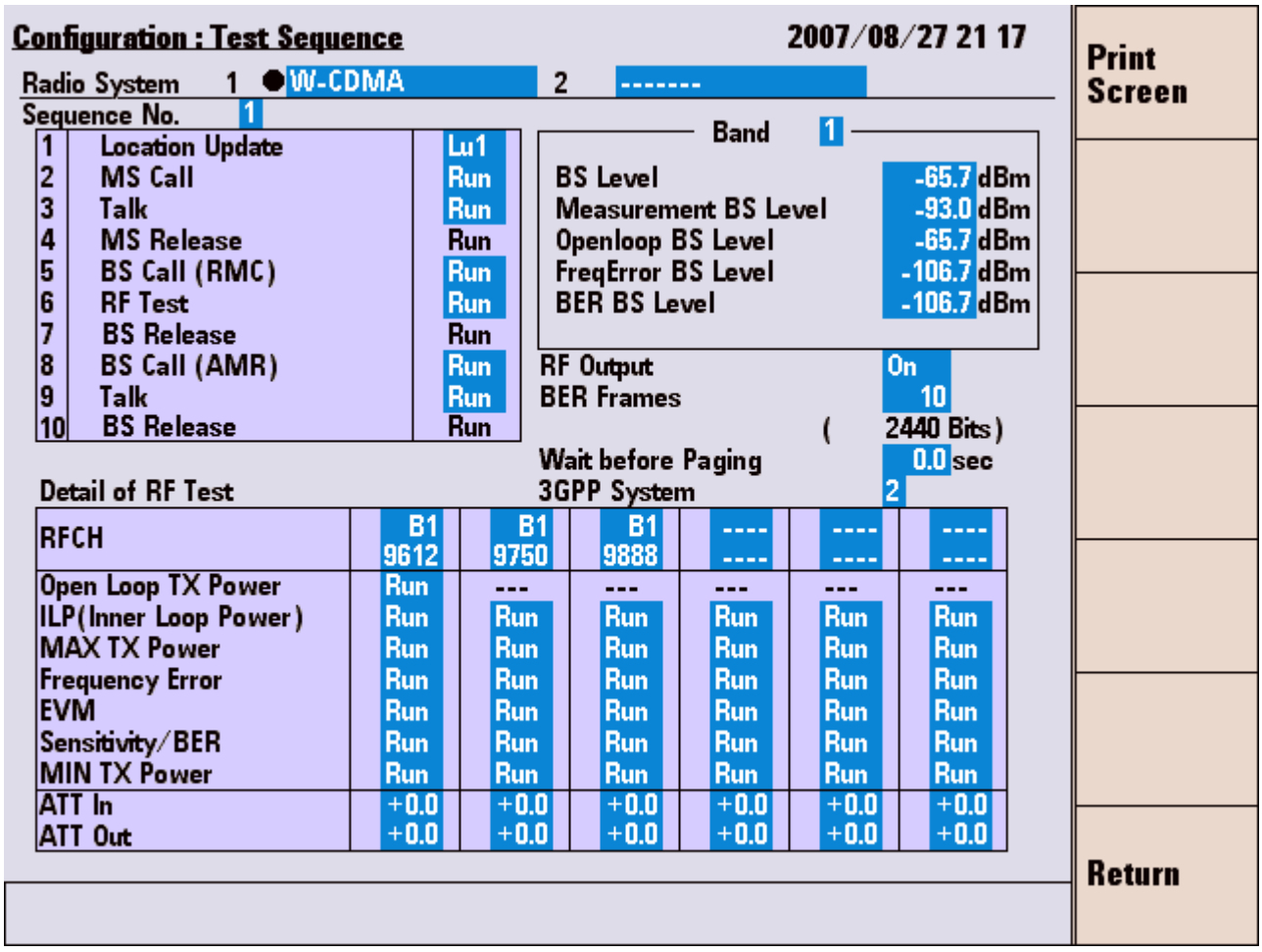

Configuration : Test Sequence
2007/08/27 21 17
Radio System 1 W-CDMA 2 -------
Sequence No. 1
1 Location Update Lu1
2 MS Call Run
3 Talk Run
4 MS Release Run
5 BS Call (RMC) Run
6 RF Test Run
7 BS Release Run
8 BS Call (AMR) Run
9 Talk Run
10 BS Release Run
Band 1
BS Level -65.7 dBm
Measurement BS Level -93.0 dBm
Openloop BS Level -65.7 dBm
FreqError BS Level -106.7 dBm
BER BS Level -106.7 dBm
RF Output On
BER Frames 10
(2440 Bits)
Wait before Paging 0.0 sec
3GPP System 2
Detail of RF Test
RFCH B1 9612 B1 9750 B1 9888 ---- ---- ---- ---- ----
Open Loop TX Power Run --- --- --- --- ---
ILP(Inner Loop Power) Run Run Run Run Run Run
MAX TX Power Run Run Run Run Run Run
Frequency Error Run Run Run Run Run Run
EVM Run Run Run Run Run Run
Sensitivity/BER Run Run Run Run Run Run
MIN TX Power Run Run Run Run Run Run
ATT In +0.0 +0.0 +0.0 +0.0 +0.0 +0.0
ATT Out +0.0 +0.0 +0.0 +0.0 +0.0 +0.0
Print Screen
Return

Figure 4-15 [Configuration: Test Sequence] Screen

3 Enter appropriate attenuation values, depending on the radio frequency channel, in the "ATT In" and "ATT Out" fields with the CURSOR CONTROL knob. These values are effective for the RF tests in the test flow.

4 Press the **Return** softkey twice to return to the [Initial] screen.

Testing Mobile Phone Using Automatic Test

Downlink TX Power

Set the following parameters on the [Configuration: Test Sequence] screen for downlink output power in Automatic Test:

- BS Level
- Measurement BS Level
- Openloop BS Level
- FreqError BS Level
- BER BS Level

The BS Level setting is applied to signaling steps. In RF Test, different downlink TX powers are applied depending on measurement items.

- Open Loop TX Power: Openloop BS Level
- Inner Loop TX Power and Max TX Power: Measurement BS Level
- Frequency Error: FreqError BS Level
- Sensitivity/BER: BER BS Level

Figure 4-16 shows the condition of downlink TX power in Automatic Test.

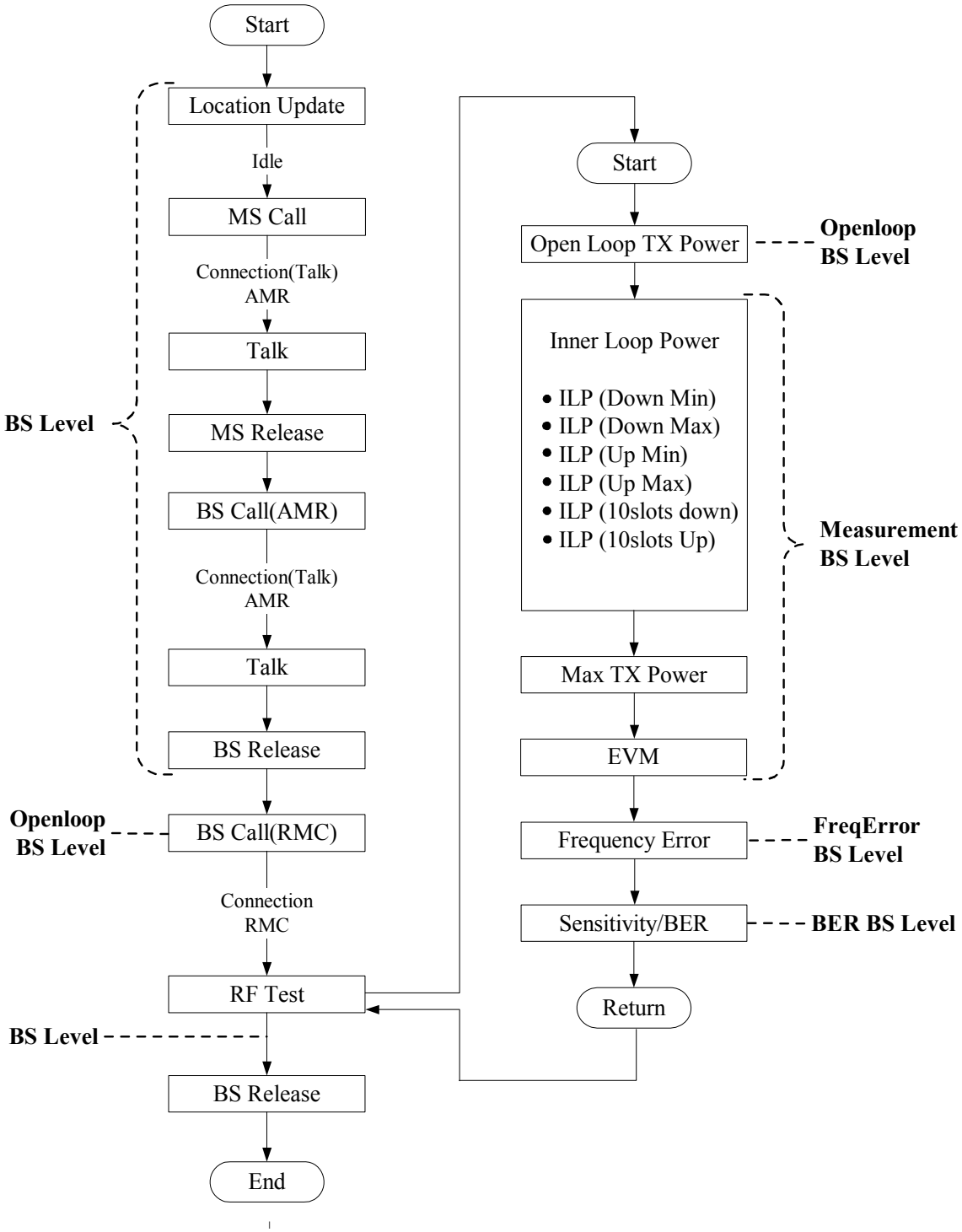


Figure 4-16 Downlink TX Power In Automatic Test

Method for Testing Mobile Phone by Automatic Test

This section describes the operation method of the Tester and a mobile phone under the test by Automatic Test.

1. Turn on the Tester and select the W-CDMA system on the [Top Menu] screen. Refer to "System Selection" on page 4-14 for more details.
2. The [Initial] screen, shown in Figure 4-17, is displayed after the tester has completed its initialization and self-test routines.

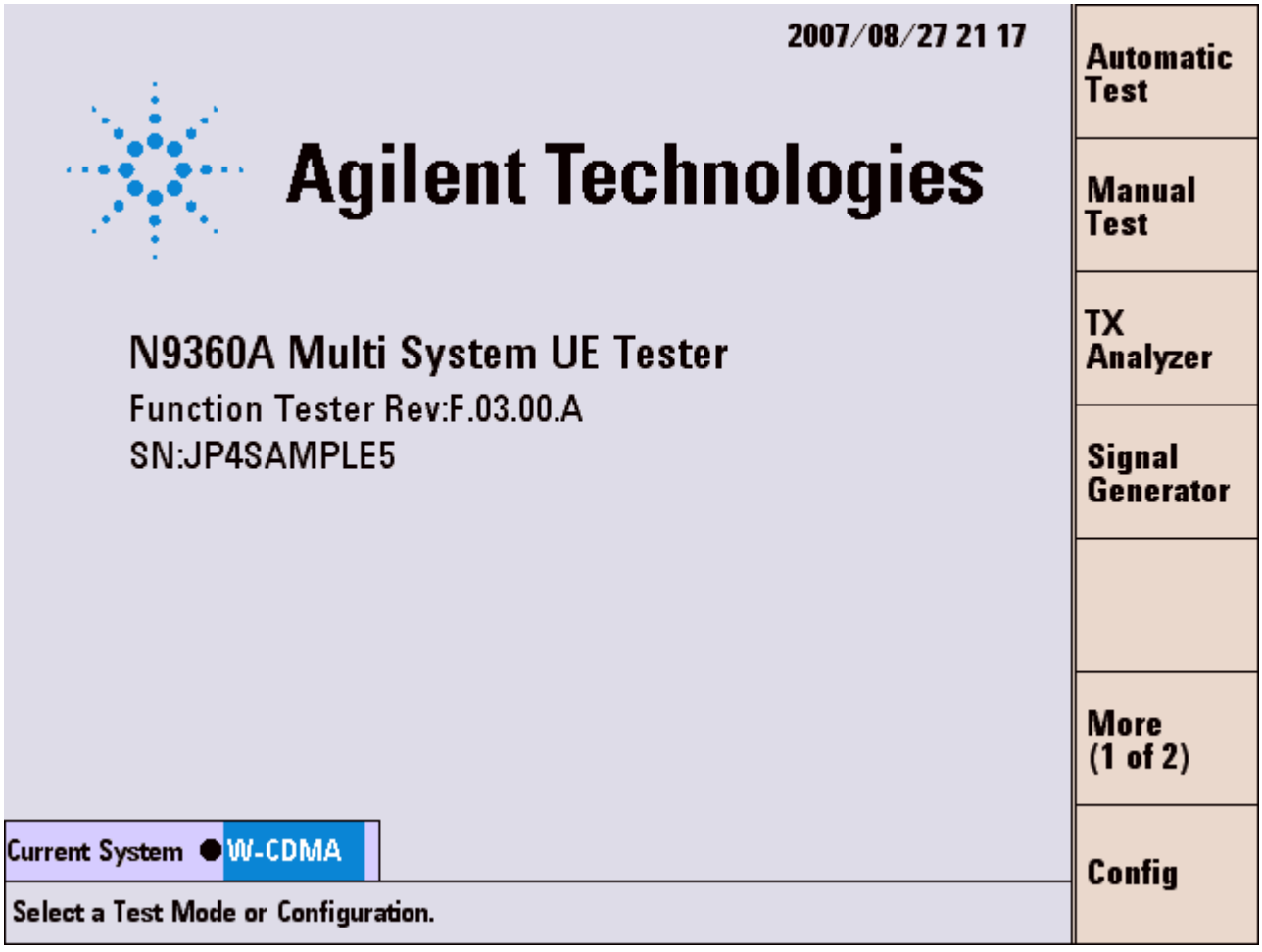


Figure 4-17 [Initial] Screen

3 Set path loss values
Press the **Config > Test Condition > Loss** softkeys on the [Initial] screen to display the [Configuration: Test Condition (Loss)] screen. Specify the "Loss" field. See Figure 4-18.

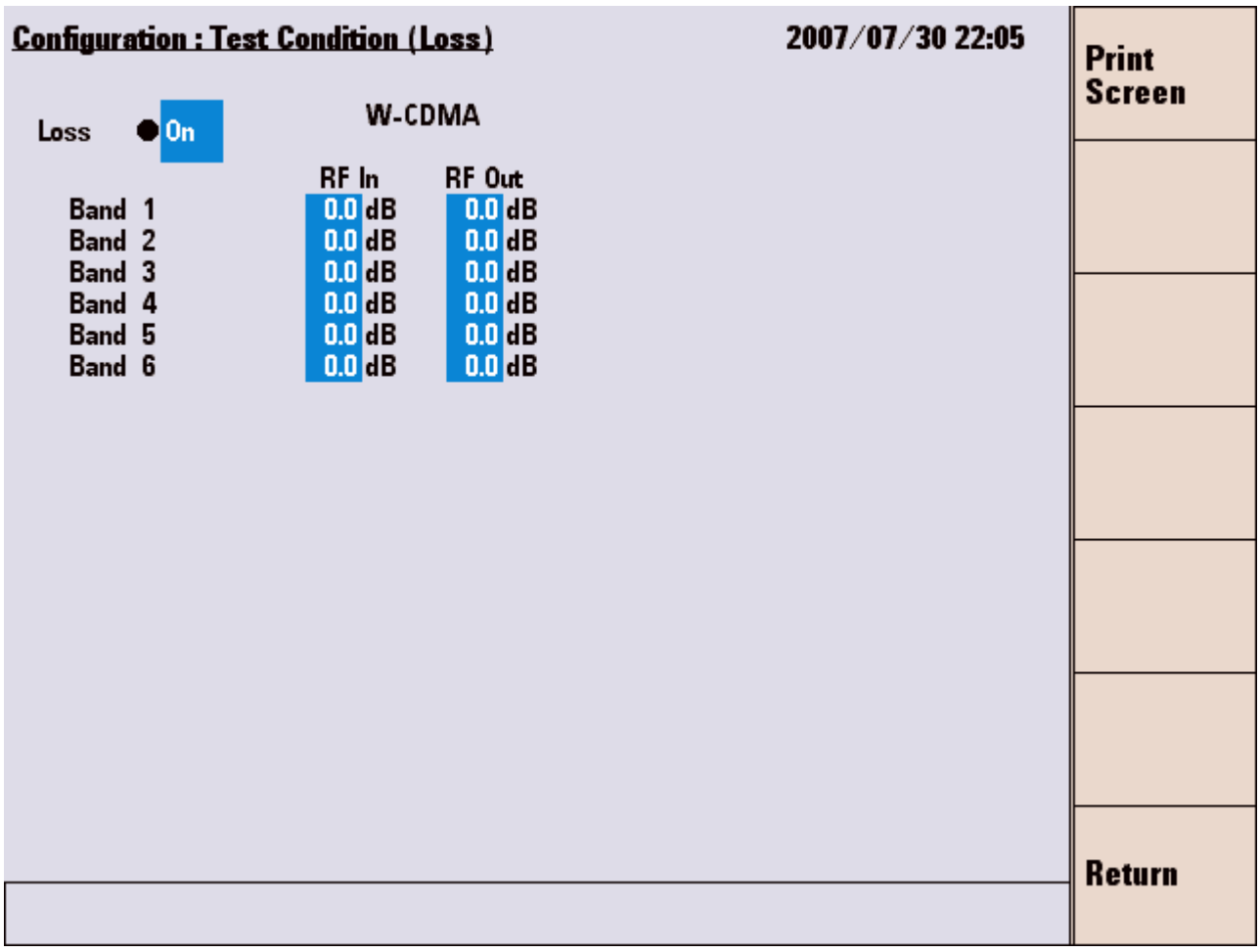


Figure 4-18 [Configuration: Test Condition (Loss)] Screen

4 Set required parameters for Automatic Test.
Press the **Test sequence** softkey to display the [Configuration: Test Sequence] screen. See Figure 4-19.

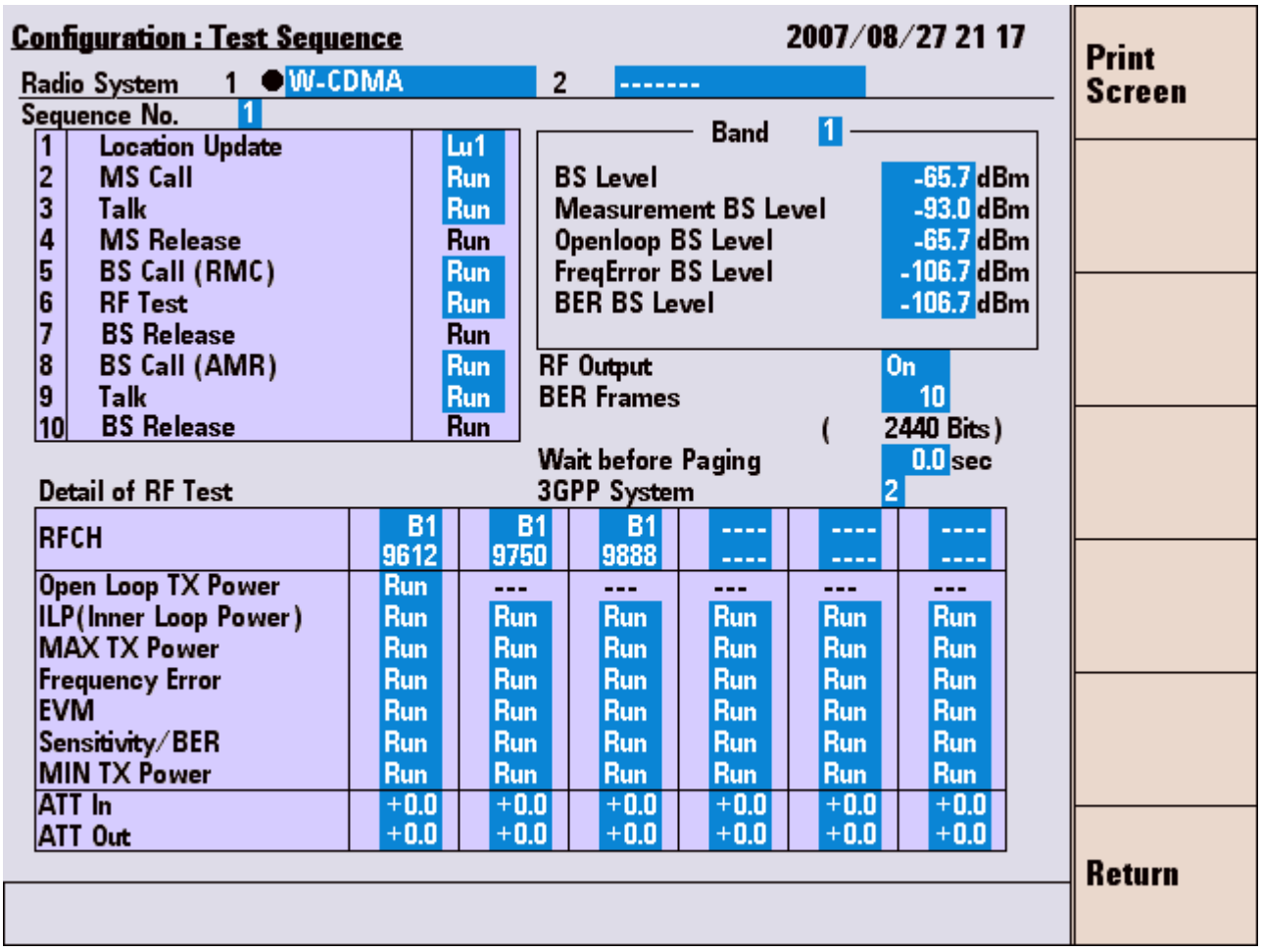

Configuration : Test Sequence
2007/08/27 21 17
Radio System 1 W-CDMA 2 -------
Sequence No. 1
1 Location Update Lu1
2 MS Call Run
3 Talk Run
4 MS Release Run
5 BS Call (RMC) Run
6 RF Test Run
7 BS Release Run
8 BS Call (AMR) Run
9 Talk Run
10 BS Release Run
Band 1
BS Level -65.7 dBm
Measurement BS Level -93.0 dBm
Openloop BS Level -65.7 dBm
FreqError BS Level -106.7 dBm
BER BS Level -106.7 dBm
RF Output On
BER Frames 10
(2440 Bits)
Wait before Paging 0.0 sec
3GPP System 2
Detail of RF Test
RFCH B1 9612 B1 9750 B1 9888 ---- ---- ---- ---- ---- ----
Open Loop TX Power Run --- --- --- --- ---
ILP(Inner Loop Power) Run Run Run Run Run Run
MAX TX Power Run Run Run Run Run Run
Frequency Error Run Run Run Run Run Run
EVM Run Run Run Run Run Run
Sensitivity/BER Run Run Run Run Run Run
MIN TX Power Run Run Run Run Run Run
ATT In +0.0 +0.0 +0.0 +0.0 +0.0 +0.0
ATT Out +0.0 +0.0 +0.0 +0.0 +0.0 +0.0
Print Screen
Return

Figure 4-19 [Configuration: Test Sequence] Screen

5 Set the input fields with the CURSOR CONTROL knob.

- Set "Radio System 2" to "W-CDMA" or "-----". When "-----" is set, only sequence 1 is executed. ("Radio System 1" is fixed to "W-CDMA".)
- Set the test flow and measurement items field to "Run" for execution or "-----" for skip.

6 Set the test condition
Press the **Return** softkey and then the **Test Condition** softkey to display the [Configuration: Test Condition] screen.

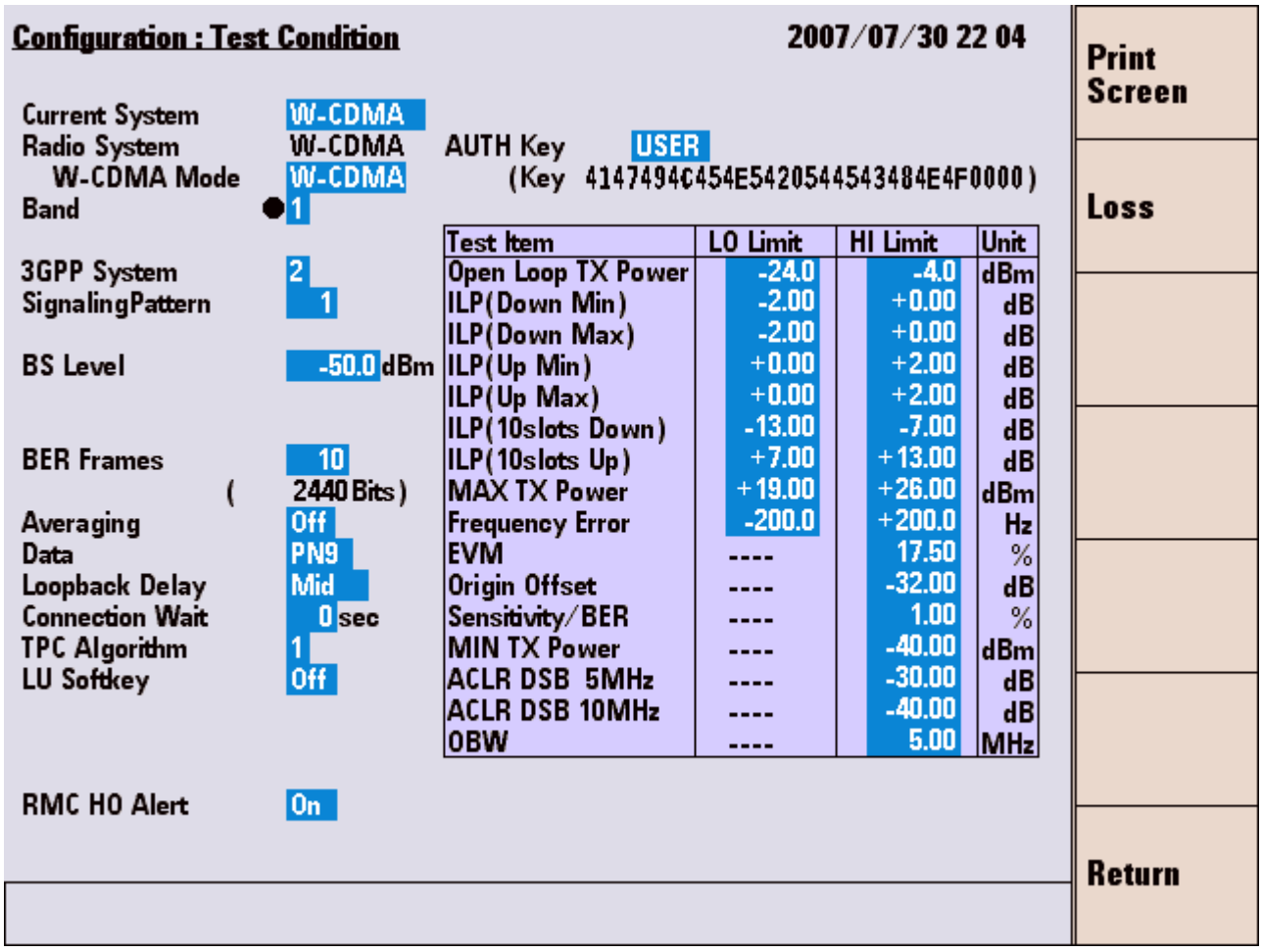

Configuration : Test Condition
2007/07/30 22 04
Current System W-CDMA
Radio System W-CDMA
W-CDMA Mode W-CDMA
Band 1
AUTH Key USER
(Key 4147494C454E5420544543484E4F0000)
3GPP System 2
SignalingPattern 1
BS Level -50.0 dBm
BER Frames 10
(2440 Bits)
Averaging Off
Data PN9
Loopback Delay Mid
Connection Wait 0 sec
TPC Algorithm 1
LU Softkey Off
RMC HO Alert On
Test Item | LO Limit | HI Limit | Unit
Open Loop TX Power | -24.0 | -4.0 | dBm
ILP(Down Min) | -2.00 | +0.00 | dB
ILP(Down Max) | -2.00 | +0.00 | dB
ILP(Up Min) | +0.00 | +2.00 | dB
ILP(Up Max) | +0.00 | +2.00 | dB
ILP(10slots Down) | -13.00 | -7.00 | dB
ILP(10slots Up) | +7.00 | +13.00 | dB
MAX TX Power | +19.00 | +26.00 | dBm
Frequency Error | -200.0 | +200.0 | Hz
EVM | ---- | 17.50 | %
Origin Offset | ---- | -32.00 | dB
Sensitivity/BER | ---- | 1.00 | %
MIN TX Power | ---- | -40.00 | dBm
ACLR DSB 5MHz | ---- | -30.00 | dB
ACLR DSB 10MHz | ---- | -40.00 | dB
OBW | ---- | 5.00 | MHz
Print Screen
Loss
Return

Figure 4-20 [Configuration: Test Condition] Screen

7 Set the input fields.

8 Start Automatic Test
Press the **Return** softkey twice and then the **Automatic Test** softkey. The [Auto Test: Stand-by] screen as Figure 4-21 is displayed. W-CDMA is set for Sequence 2 on the screen of Figure 4-21.

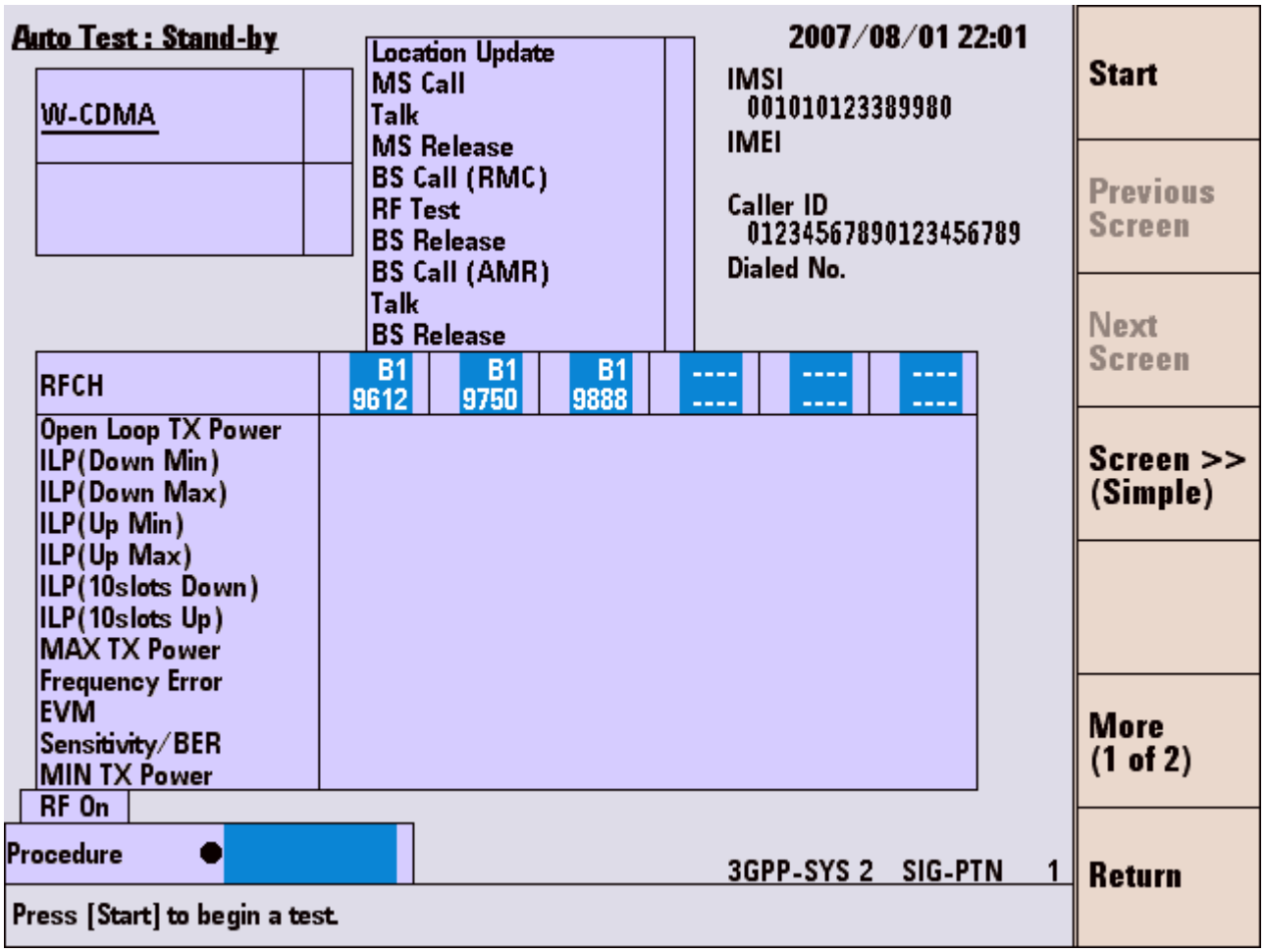


Figure 4-21 [Auto Test: Stand-by] Screen

9 Press the **Screen>>** softkey to set the display mode. Select the **Simple**, the **Detail** or the **Value** softkey. Figure 4-22 is a Value screen showing measurement result for each measurement item.

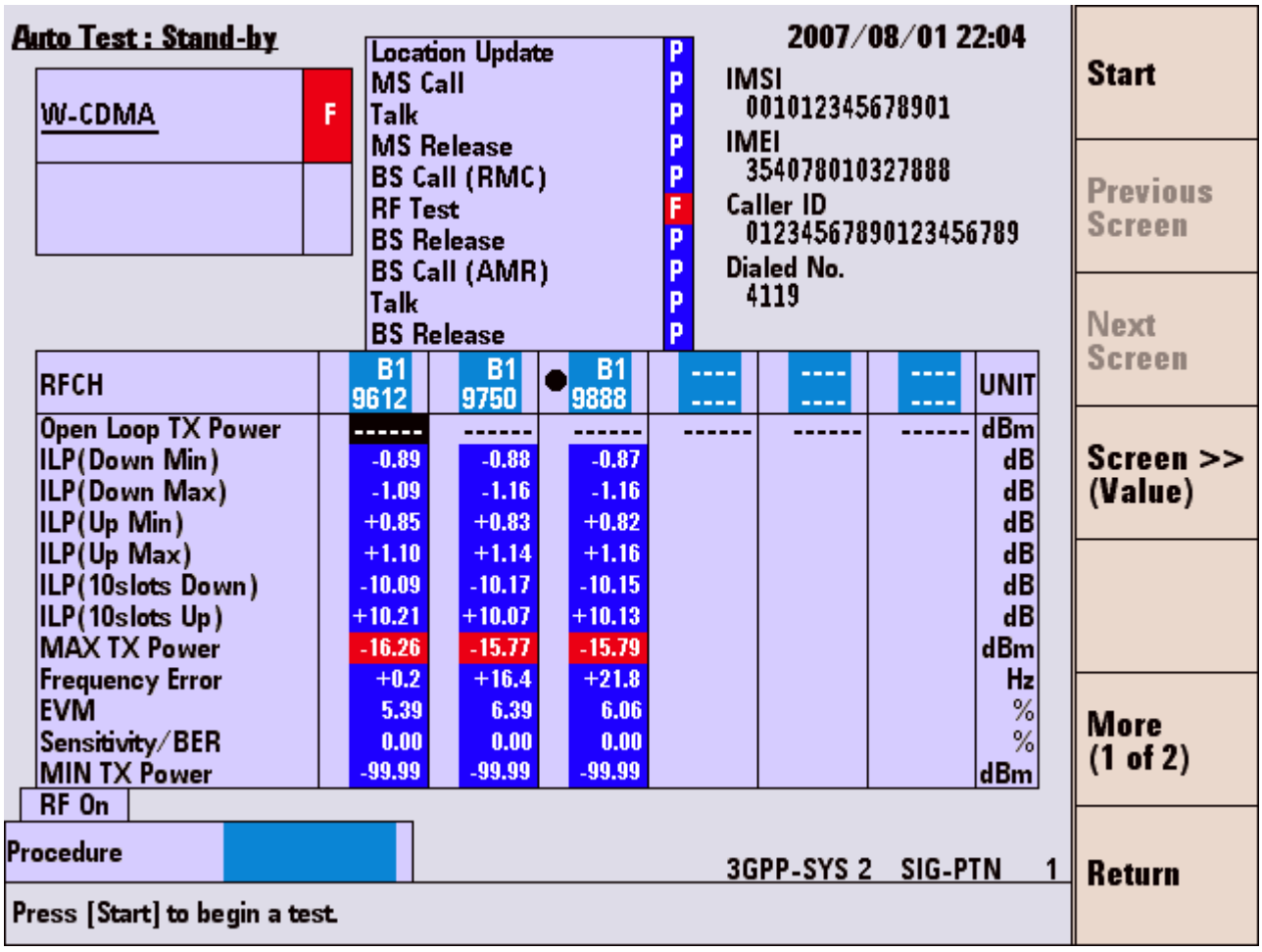


Figure 4-22 [Automatic Test: Stand-by] Value Screen

10 Press the **Start** softkey to start a test. The screen changes from Stand-by to Measuring as shown in Figure 4-23.

11 Turn on the mobile phone and wait for the mobile phone to come on, and "P" is shown at the "Location Update" step.

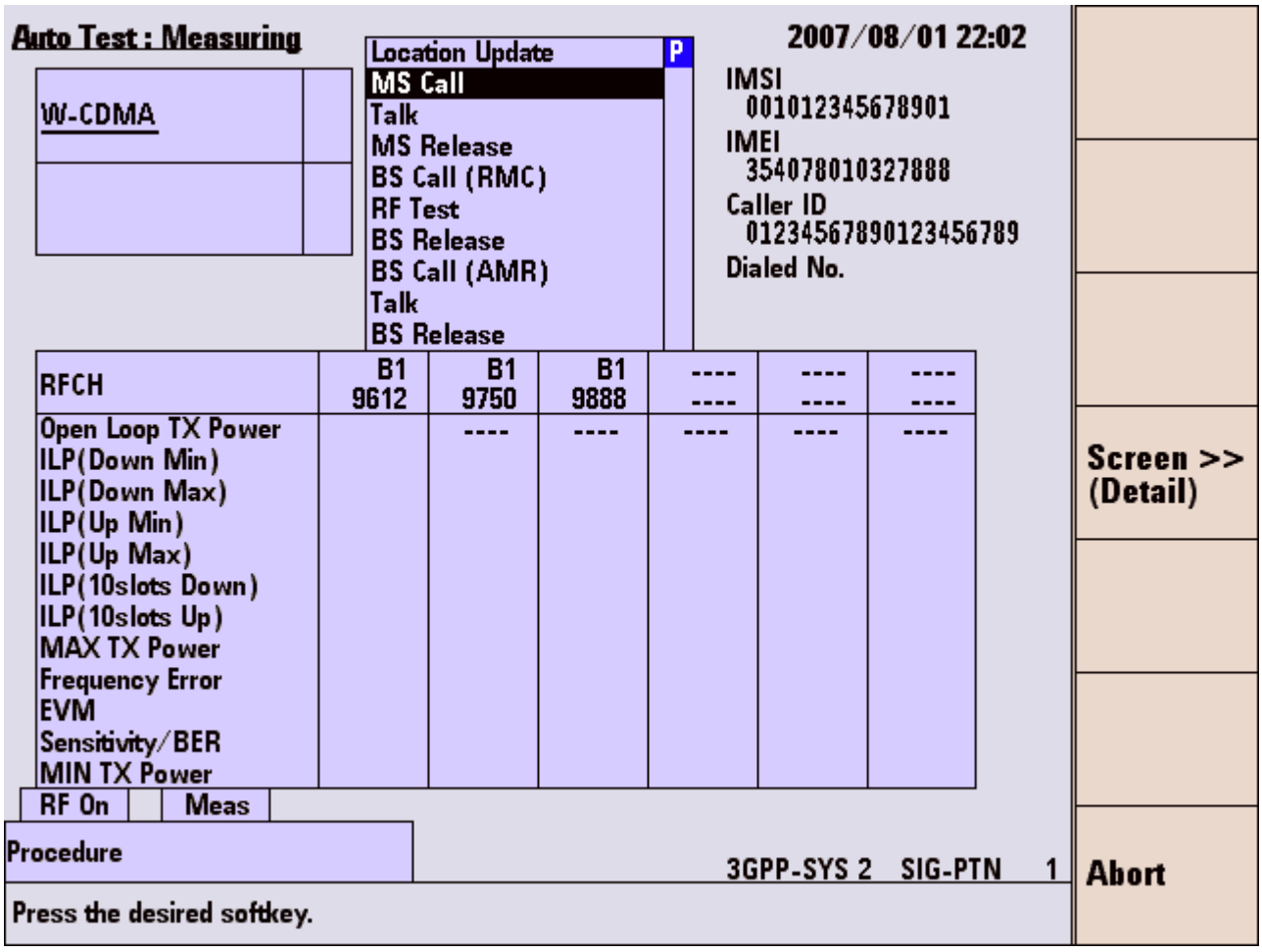


Figure 4-23 [Automatic Test: Measuring] MS Call Screen

12 At the "MS Call" step, make a call on the mobile phone. Dial an arbitrary number and press an Off Hook button on the mobile phone

13 At the "Talk" step, check the quality of loop back voice and press the **Pass** or the **Fail** softkey according to its result. See Figure 4-24.

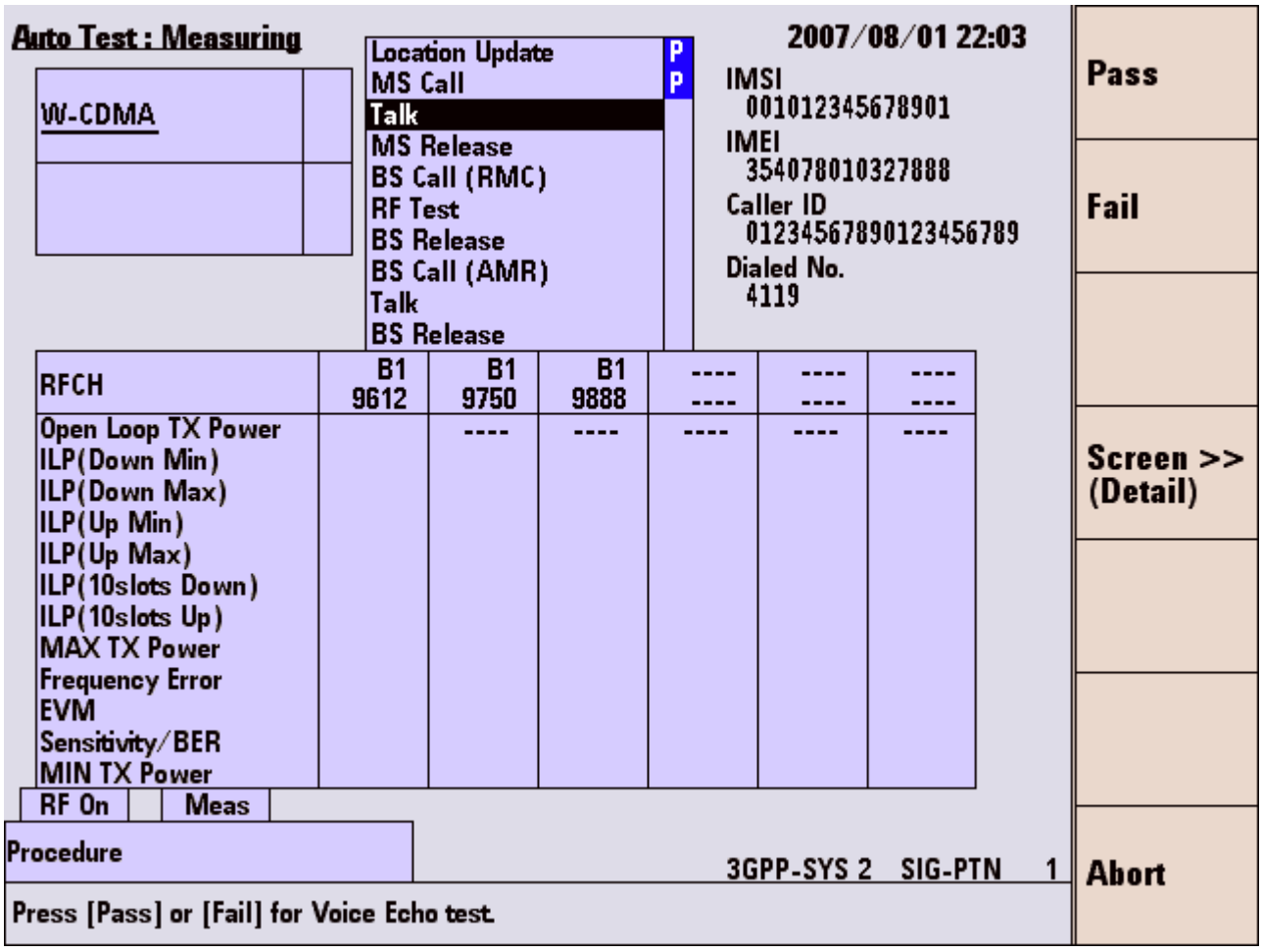


Figure 4-24 [Automatic Test: Measuring] Talk Screen

14 At the "MS Release" step, press an On Hook button on the mobile phone to finish the call.

15 At the "BS Call (AMR)" step, press the Off Hook button on the mobile phone to respond to the call from the Tester.

16 At the "Talk" step, the Tester returns voice back to the mobile phone. Check the voice quality and press the **Pass** or the **Fail** softkey according to its result.

17 At the "BS Release" step, the Tester automatically finishes the call.

18 At the "BS Call (RMC)" step, the mobile phone automatically responds to the call from the Tester.

19 At the "RF Test" step, measurement items set to "Run" on the [Configuration: Test Sequence] screen are measured.

20 At the "BS Release" step, the Tester automatically finishes the call.

21 When Sequence 2 is set on the [Configuration: Test Sequence] screen, a test of Sequence 2 is performed automatically. The test goes on in the same way as Sequence 1.

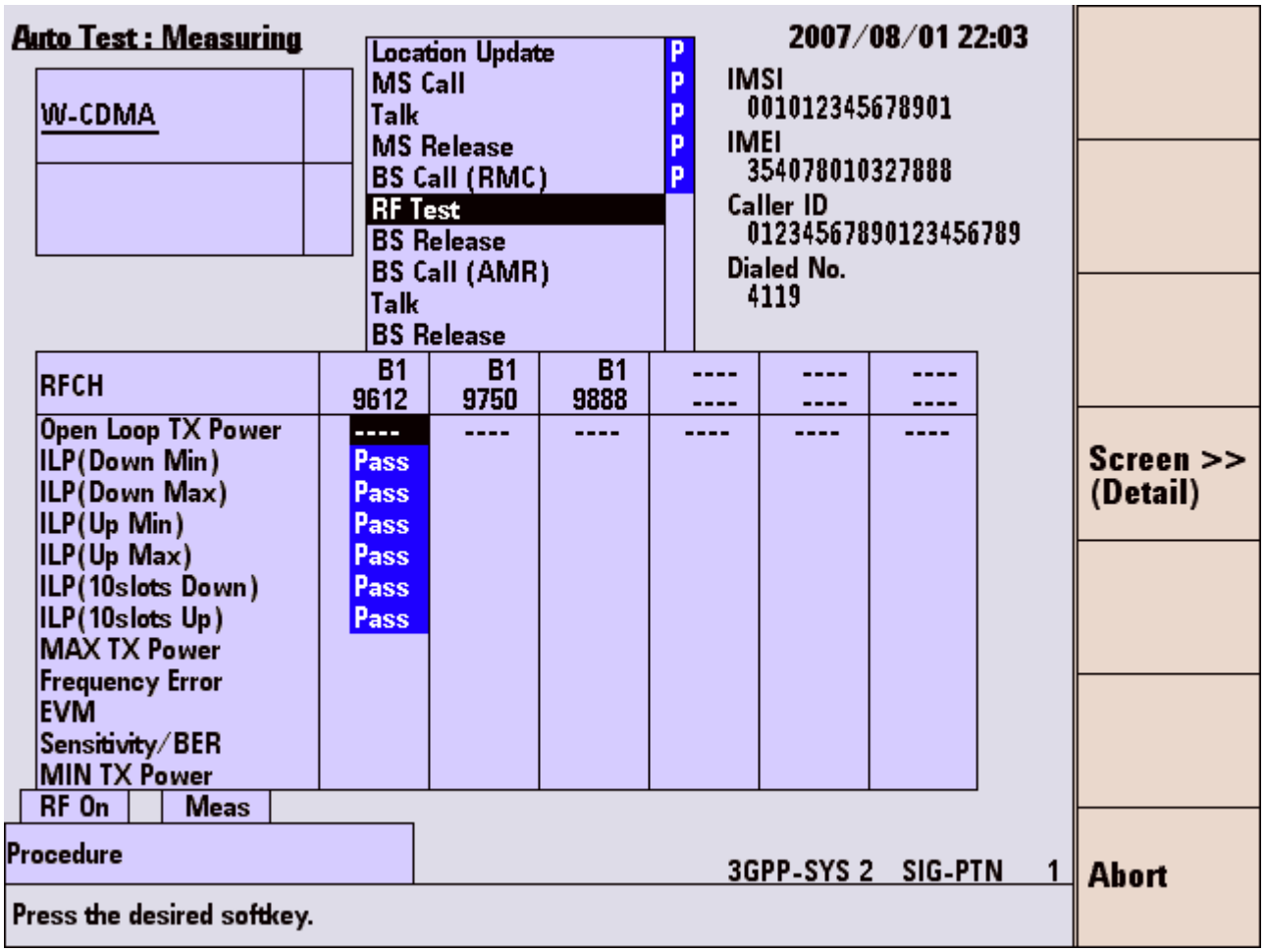


Figure 4-25 [Automatic Test: Measuring] Sequence 2 Screen

22 After completion of all tests, the screen showing measurement results is displayed.

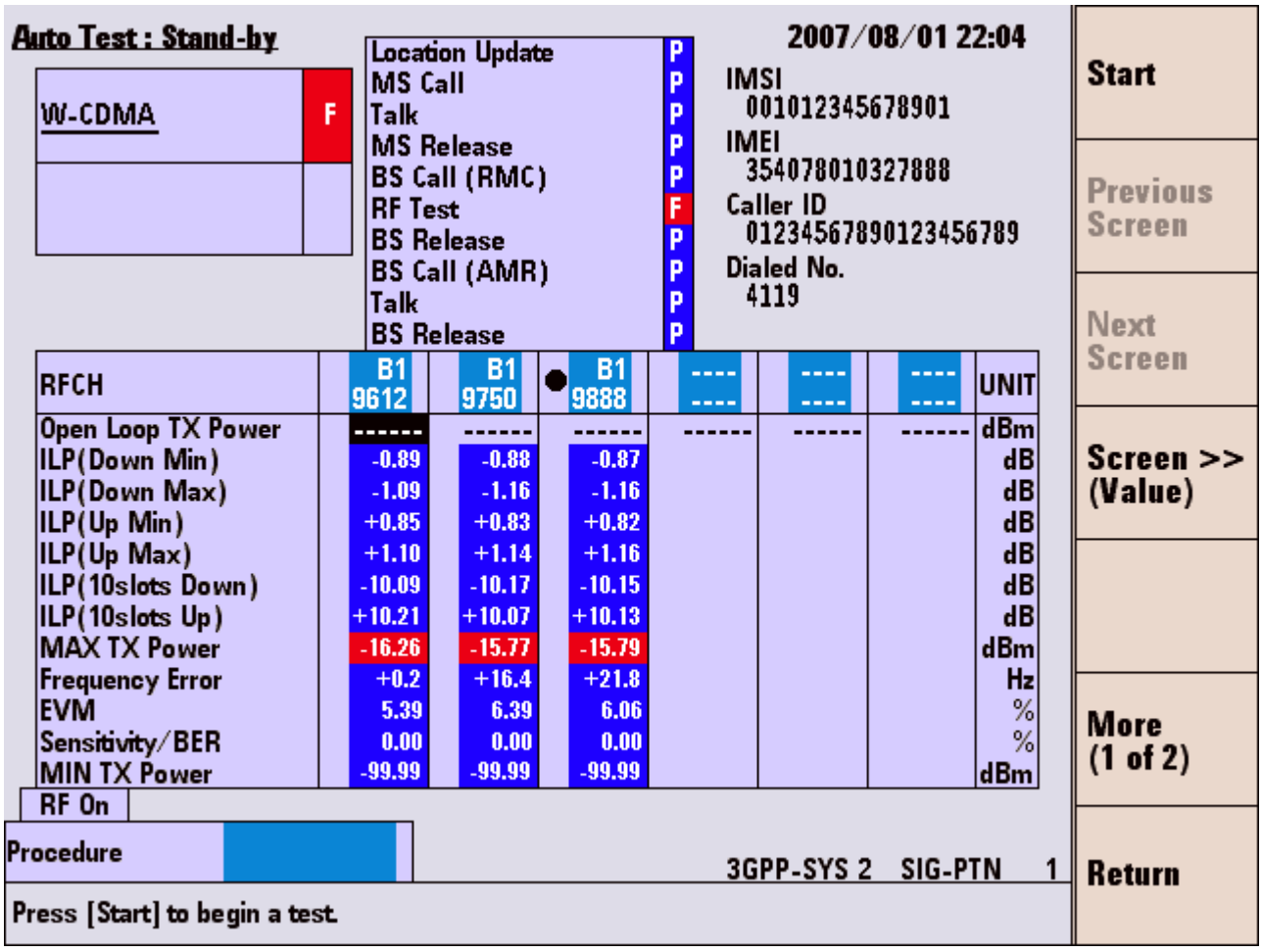


Figure 4-26 [Automatic Test: Stand-by] Measurement Result Screen

23 The user can save this test procedure in the HDD in the tester or a USB memory device. Refer to "Saving Test Setup File" on page 5-171.

Testing Mobile Phone Using Manual Test

This section describes the operation method of the Tester and a mobile phone under the test by Manual Test.

Refer to "Testing a Mobile Phone by Manual Test (HSDPA Mode)" on page 4-59 about HSDPA Test by Manual Test.

1. Turn on the Tester and select the W-CDMA system on the [Top Menu] screen. Refer to "System Selection" on page 4-14 about selection of the system.
2. The [Initial] screen, shown in Figure 4-27, is displayed after the tester has completed its initialization and self-test routines.

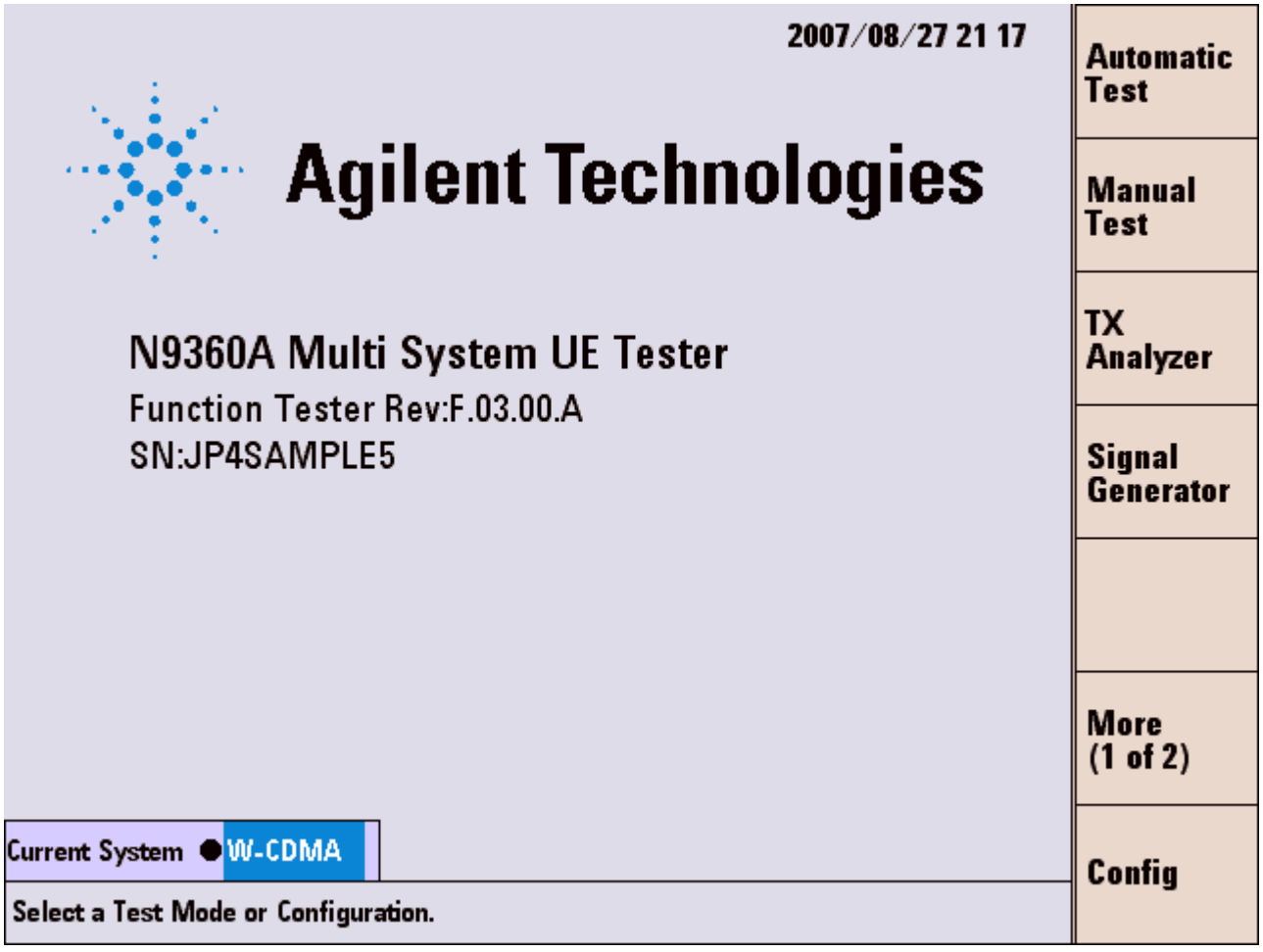


Figure 4-27 [Initial] Screen

3 Set path loss values.
Press the **Config > Test Condition > Loss** softkeys on the [Initial] screen to display the [Configuration: Test Condition (Loss)] acreen. Specify the "Loss" field.

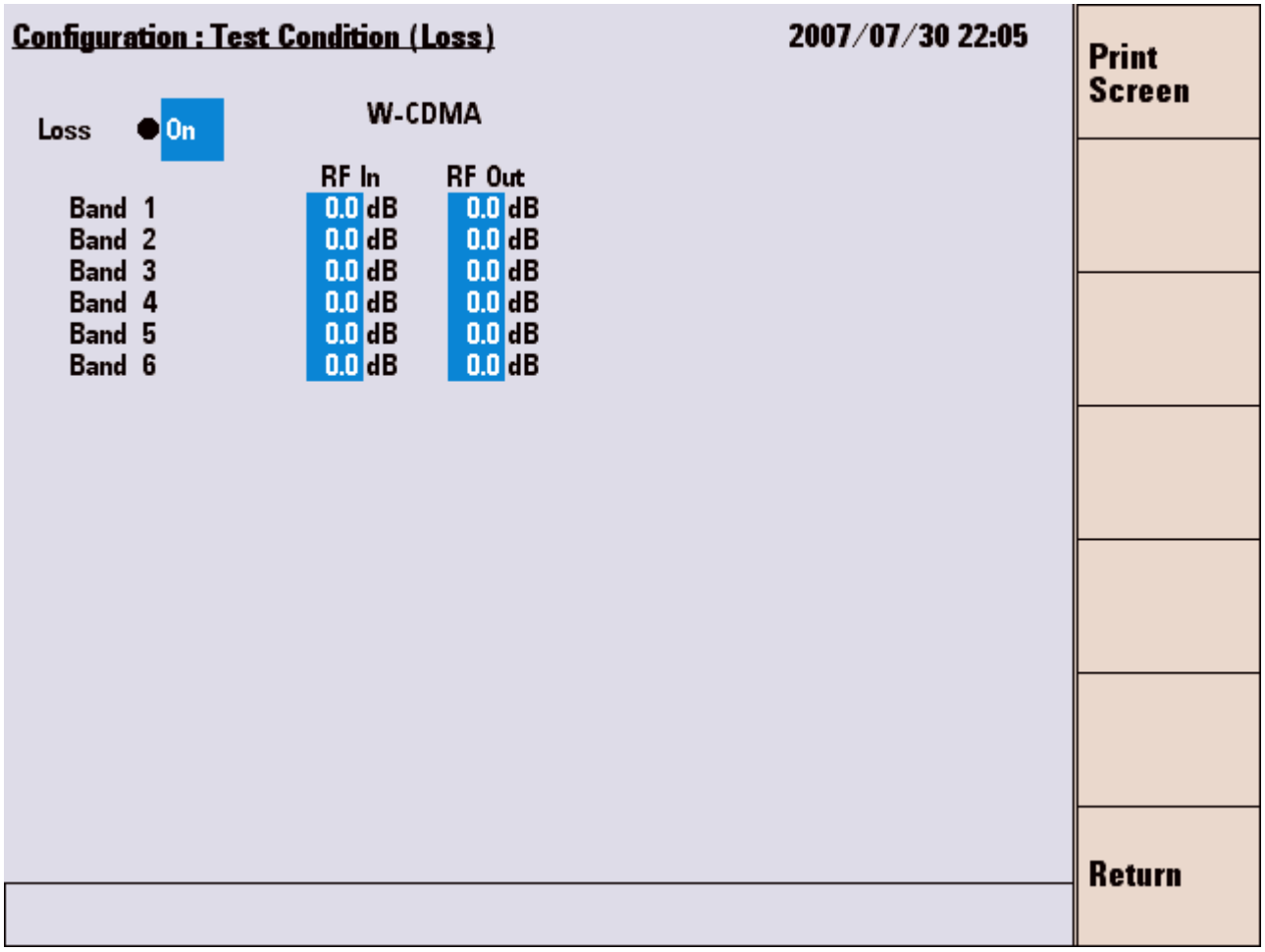


Figure 4-28 [Configuration: Test Condition (Loss)] Screen

4 Set required parameters for Manual Test.
Press the **Test Condition** softkey to display the [Configuration: Test Condition] screen for required setting on Manual Test.

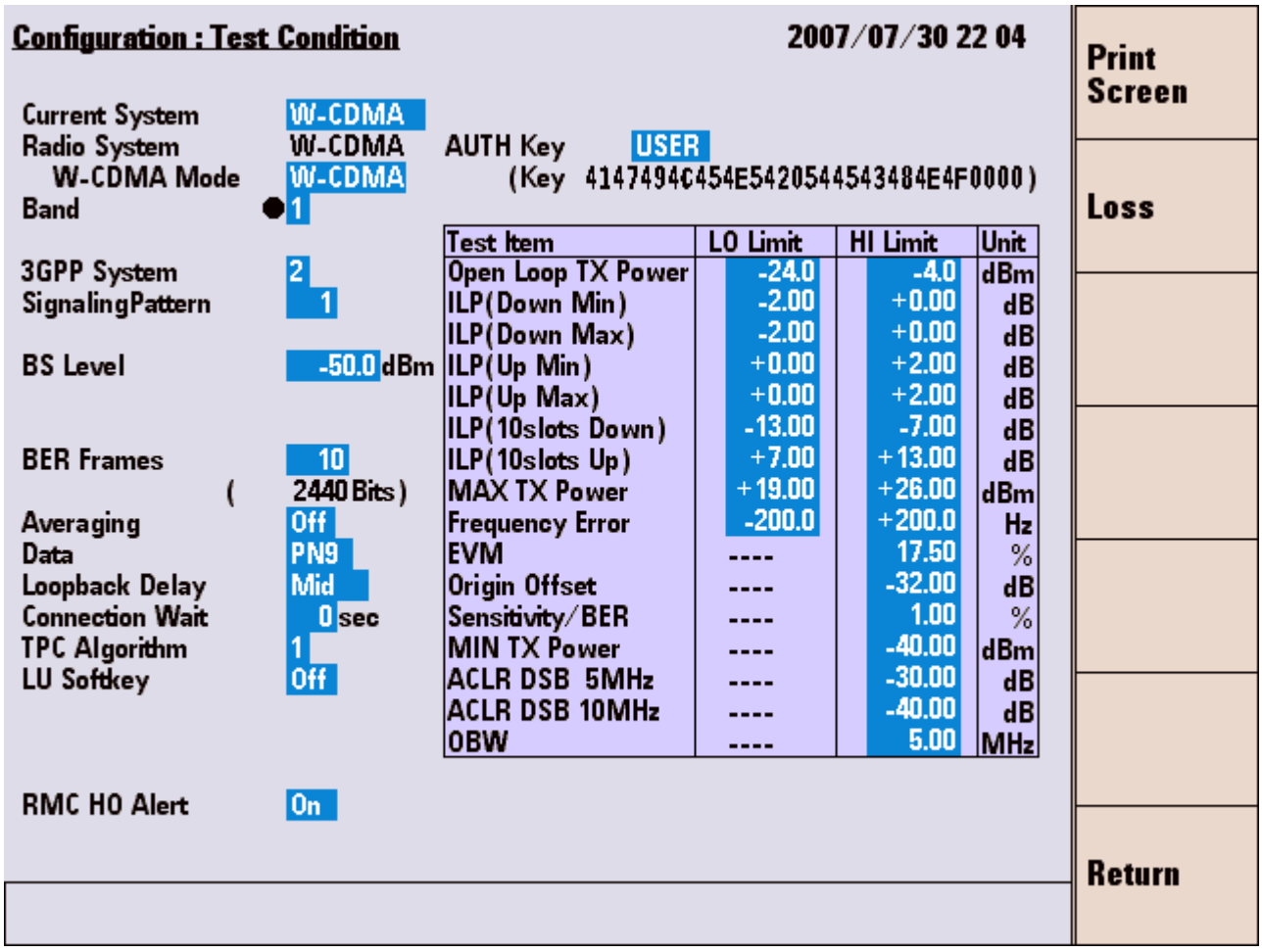

Configuration : Test Condition
2007/07/30 22 04
Current System W-CDMA
Radio System W-CDMA
W-CDMA Mode W-CDMA
Band 1
AUTH Key USER
(Key 4147494C454E5420544543484E4F0000)
3GPP System 2
SignalingPattern 1
BS Level -50.0 dBm
BER Frames 10
(2440 Bits)
Averaging Off
Data PN9
Loopback Delay Mid
Connection Wait 0 sec
TPC Algorithm 1
LU Softkey Off
RMC HO Alert On
Test Item | LO Limit | HI Limit | Unit
Open Loop TX Power | -24.0 | -4.0 | dBm
ILP(Down Min) | -2.00 | +0.00 | dB
ILP(Down Max) | -2.00 | +0.00 | dB
ILP(Up Min) | +0.00 | +2.00 | dB
ILP(Up Max) | +0.00 | +2.00 | dB
ILP(10slots Down) | -13.00 | -7.00 | dB
ILP(10slots Up) | +7.00 | +13.00 | dB
MAX TX Power | +19.00 | +26.00 | dBm
Frequency Error | -200.0 | +200.0 | Hz
EVM | ---- | 17.50 | %
Origin Offset | ---- | -32.00 | dB
Sensitivity/BER | ---- | 1.00 | %
MIN TX Power | ---- | -40.00 | dBm
ACLR DSB 5MHz | ---- | -30.00 | dB
ACLR DSB 10MHz | ---- | -40.00 | dB
OBW | ---- | 5.00 | MHz
Print Screen
Loss
Return

Figure 4-29 [Configuration: Test Condition] Screen

5 Set the input fields with the CURSOR CONTROL knob. Set the "W-CDMA Mode" to "W-CDMA".

6 Start Manual Test. Press the **Return** softkey twice and then the **Manual Test** softkey. The [Manual Test: Stand-by] screen, Figure 4-30, is displayed.

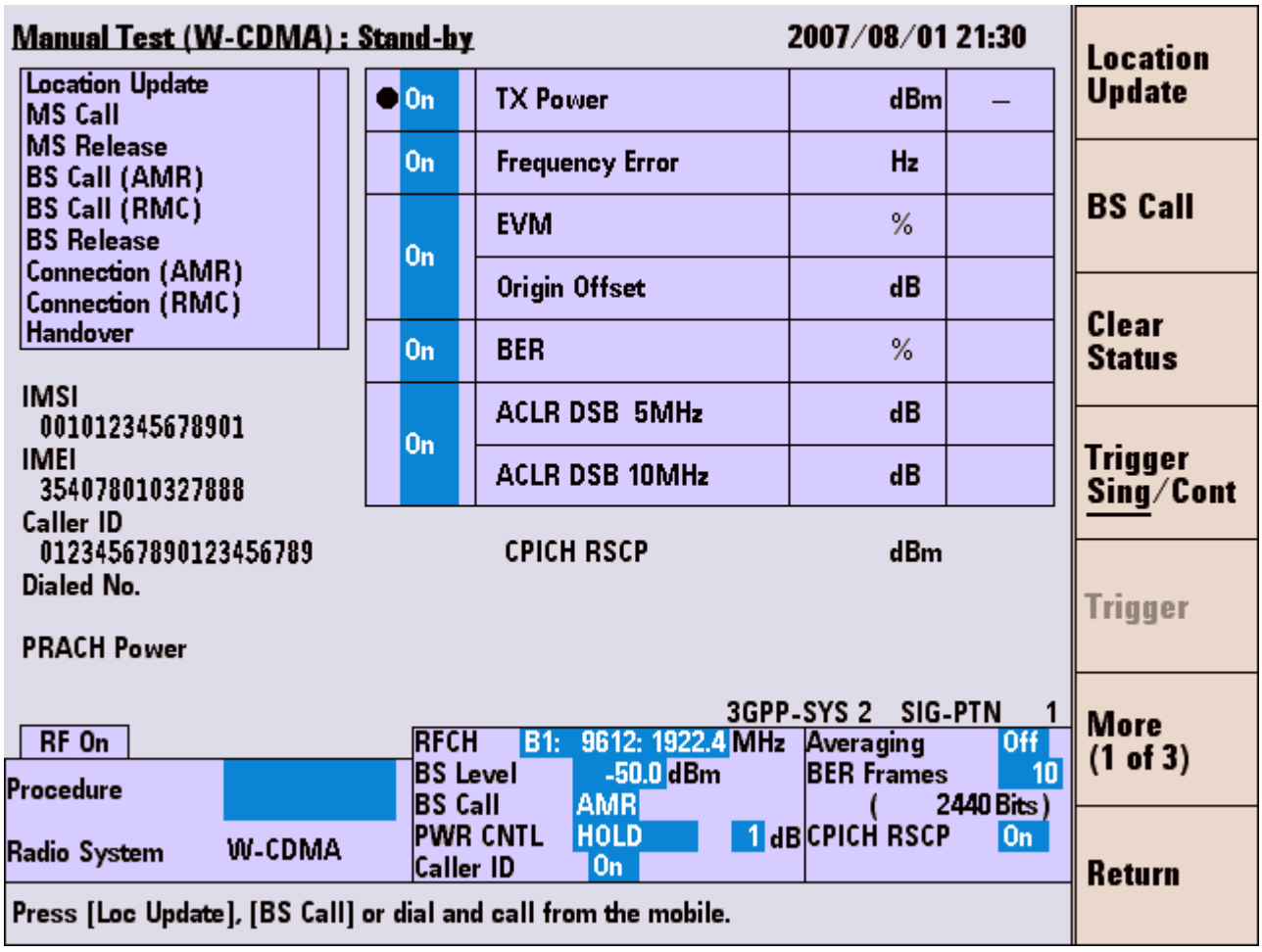


Figure 4-30 [Manual Test: Stand-by] Screen

7 Set the input fields.
Set the type of BS Call (AMR or RMC) to be executed during the test at the "BS Call" input field.

8 Turn on the mobile phone. The display status changes from Stand-by to Measuring.

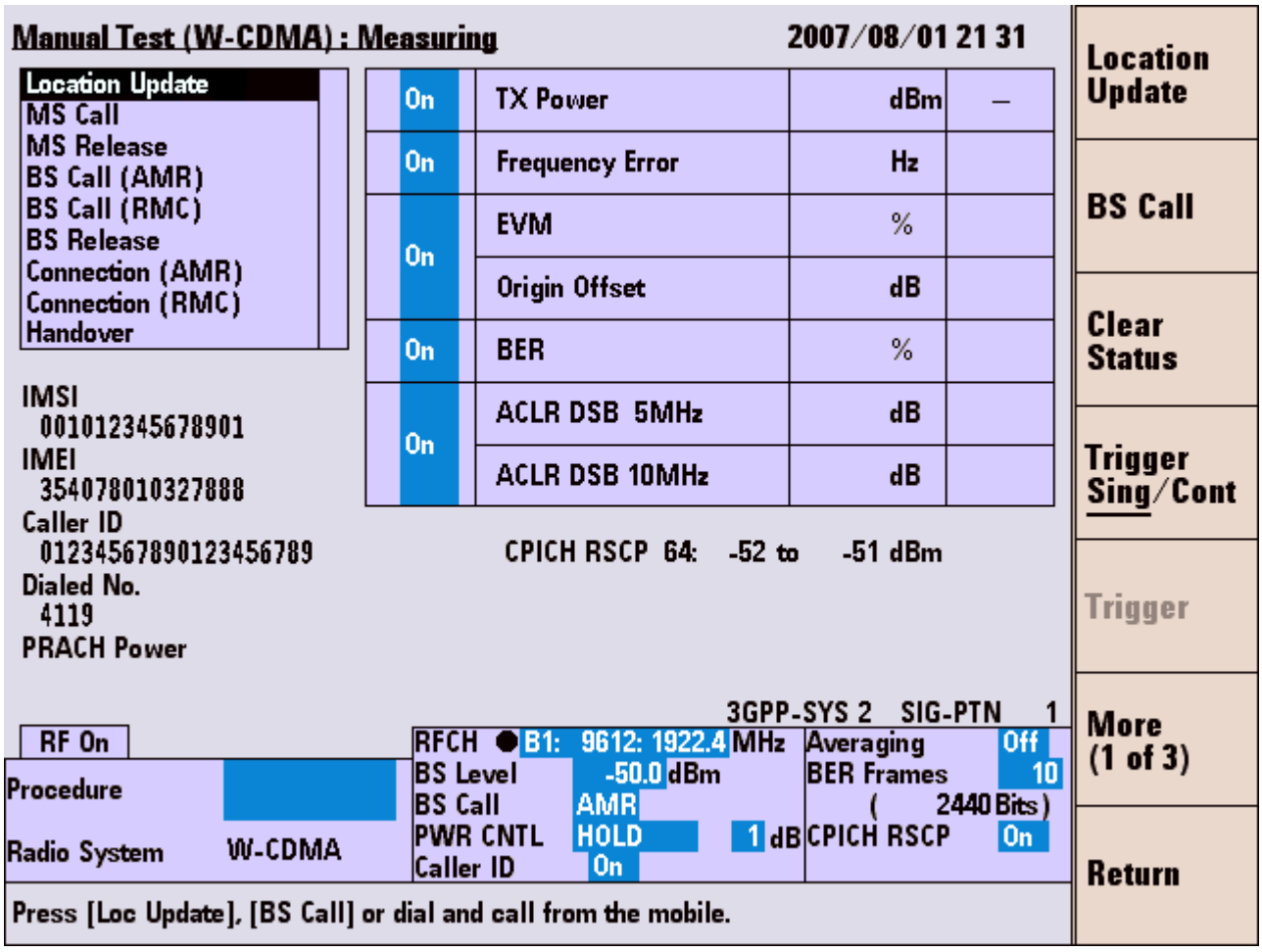


Figure 4-31 [Manual Test: Measuring] Screen for Location Update

9 After completion of location update, the display status returns to Stand-by (Figure 4-32).
Start MS Call or BS Call. The type of BS Call is "AMR" or "RMC" according to the setting at the "BS Call" input field in step 7.

- To execute MS Call, perform step 10 to step 13, and then proceed to step 25.
- To execute BS Call (AMR), perform step 14 to step 18, and then proceed to step 25.
- To execute BS Call (RMC), perform step 19 to step 24, and then proceed to step 25.

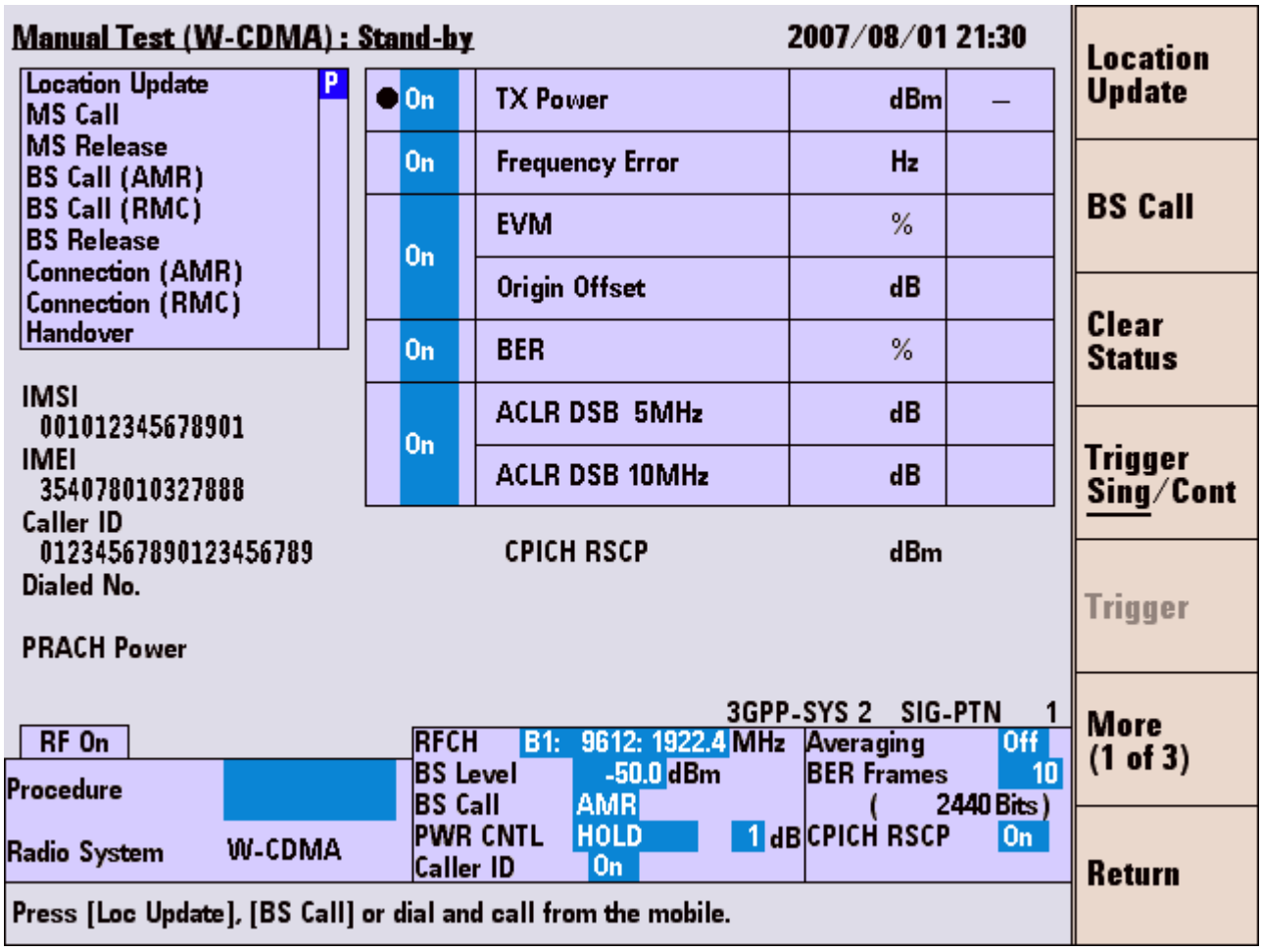


Figure 4-32 [Manual Test: Stand-by] Screen After Location Update

10 Make a call on the mobile phone to start MS Call. Dial an arbitrary and press the Off Hook button on the mobile phone.

11 If the "Connection Wait" field on the [Configuration: Test Condition] screen is set to any number other than 0, the **Answer** softkey is displayed when manually responding to the call from the mobile phone becomes acceptable on the Tester. Press the **Answer** softkey within the specified time to respond to MS Call. When the specified time is over, the Tester automatically responds to MS Call. If the "Connection Wait" field is set to 0, the tester automatically responds to the call immediately.

12 CPICH RSCP is reported from the mobile phone when the "CPICH RSCP" field is set to "On".

13 At the "Connection (AMR)" step, the Tester returns voice back to the mobile phone. Check the voice quality.

14 Also, CPICH RSCP can be measured at the "Connection (AMR)" step. Press the **Measurement CPICH RSCP** softkey to make the mobile phone report the value of CPICH RSCP, and then the value is displayed.

15 Finish the call. Press an On Hook button on the mobile phone to start MS Release, or press the **Release** softkey to start BS Release.

16 Press the **BS Call** softkey to start BS Call (AMR). PRACH Power is measured. Also, CPICH RSCP is reported from the mobile phone when the "CPICH RSCP" field is set to "On".

17 Respond to the call from the Tester. Press the Off Hook button on the mobile phone.

18 At the "Connection (AMR)" step, the Tester returns voice back to the mobile phone. Check voice quality.

19 Also, CPICH RSCP can be measured at the "Connection (AMR)" step.
Press the **Measurement CPICH RSCP** softkey to make the mobile phone report the value of CPICH RSCP, and then the value is displayed.

20 Finish the call. Press the **Release** softkey to start BS Release or press an On Hook button on the mobile phone to start MS Release.

21 Press the **BS Call** softkey to start BS Call (RMC). RFCH Power is measured. Also, CPICH RSCP is reported from the mobile phone when the "CPICH RSCP" field is set to "On".

22 The mobile phone automatically responds to the call from the tester.

23 At the "Connection (RMC)" step, RF Test is executed. Start the measurement with the following softkey operation.

- **Trigger Sing/Cont** : When the trigger mode is **Sing**, single measurement starts when the **Trigger** softkey is pressed. To change the trigger mode to continuous mode (**Cont**), press the **Trigger Sing/Cont** softkey. When the trigger mode is **Cont**, continuous measurement starts as soon as the "Connection (RMC)" step starts.
- **Trigger**: Starts single measurement.

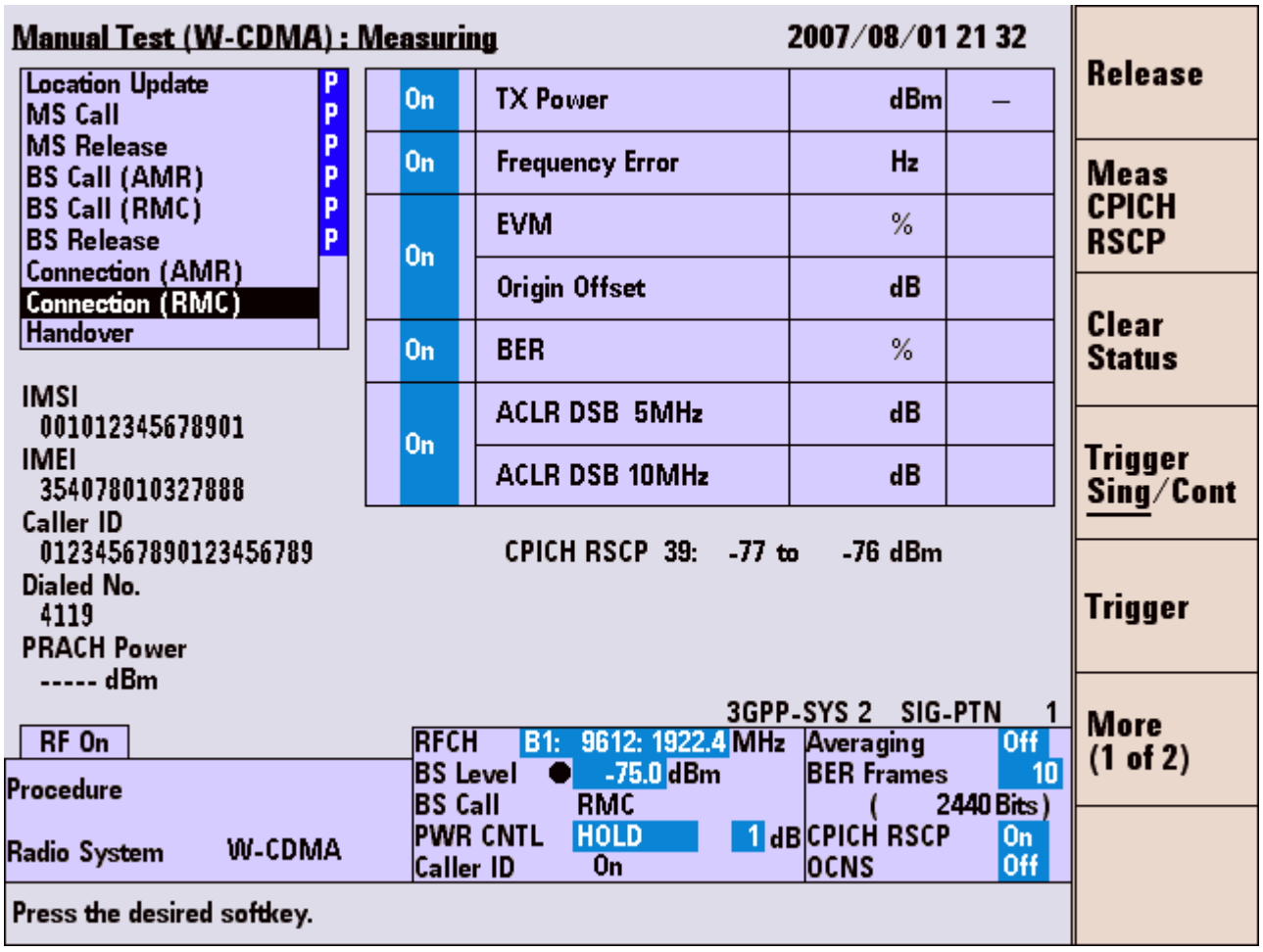


Figure 4-33 [Manual Test: Measuring] Connection Screen

24 When the trigger mode is **Cont**, press the **Trigger Sing/Cont** softkey to terminate continuous measurement. Measurement values and Pass/Fail results are shown.

25 Also, CPICH RSCP can be measured at the "Connection (RMC)" step.
Press the **Measurement CPICH RSCP** softkey to make the mobile phone report the value of CPICH RSCP, and then the value is displayed.

26 Finish the call. Press the **Release** softkey to start BS Release.

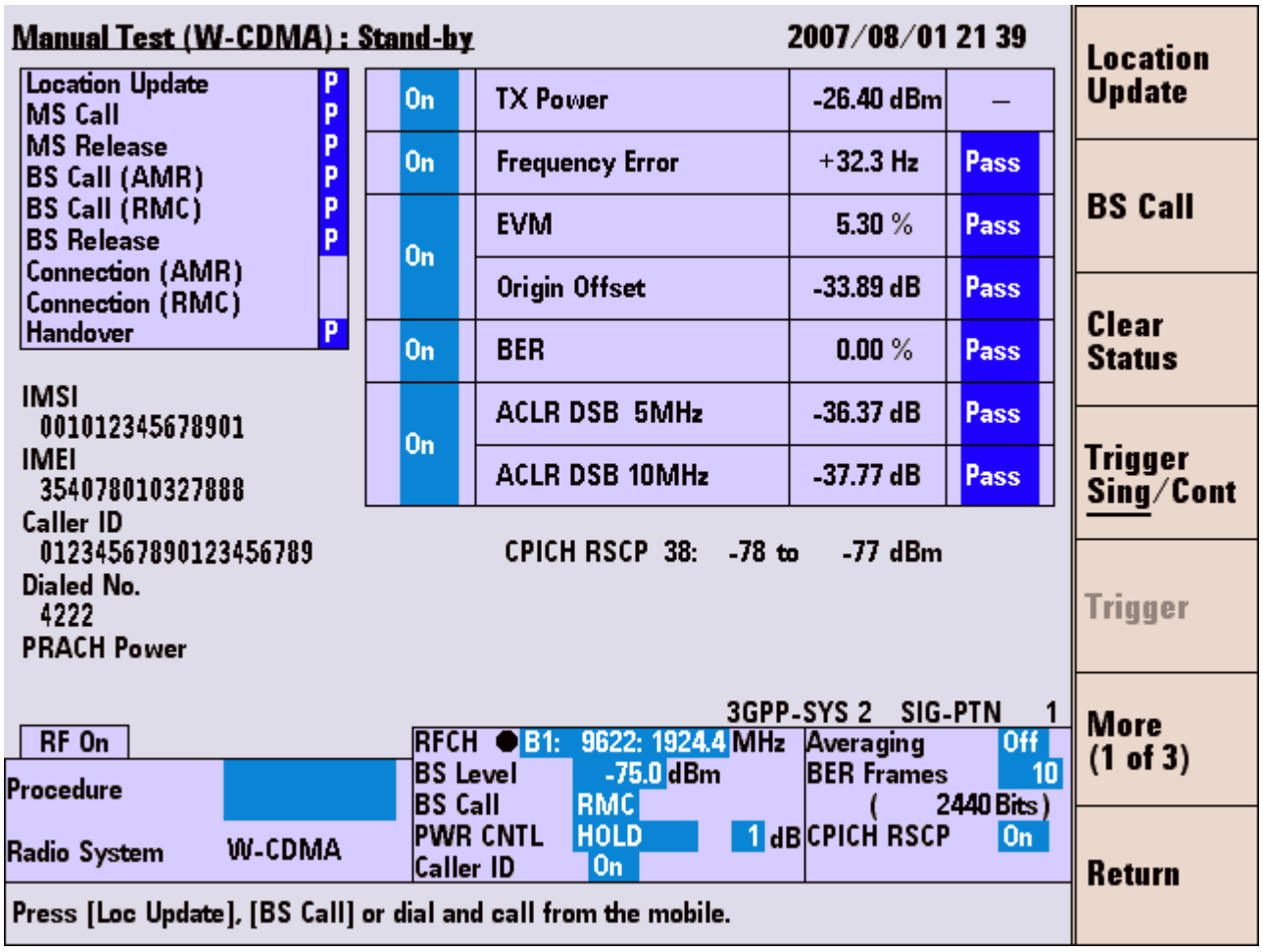


Figure 4-34 [Manual Test: Stand-by] Screen After BS Release

27 You can save this test procedure in the HDD inside the Tester or a USB memory device. Refer to "Saving Test Setup File" on page 5-171.

Handover

NOTE Install Option G00 when using the Handover function to change to GSM system.

1. Turn on the Tester and select the W-CDMA system on the [Top Menu] screen. Refer to "System Selection" on page 4-14 about selection of the system.
2. The [Initial] screen as Figure 4-35 is displayed after completion of initialization and self-test routine of the Tester.

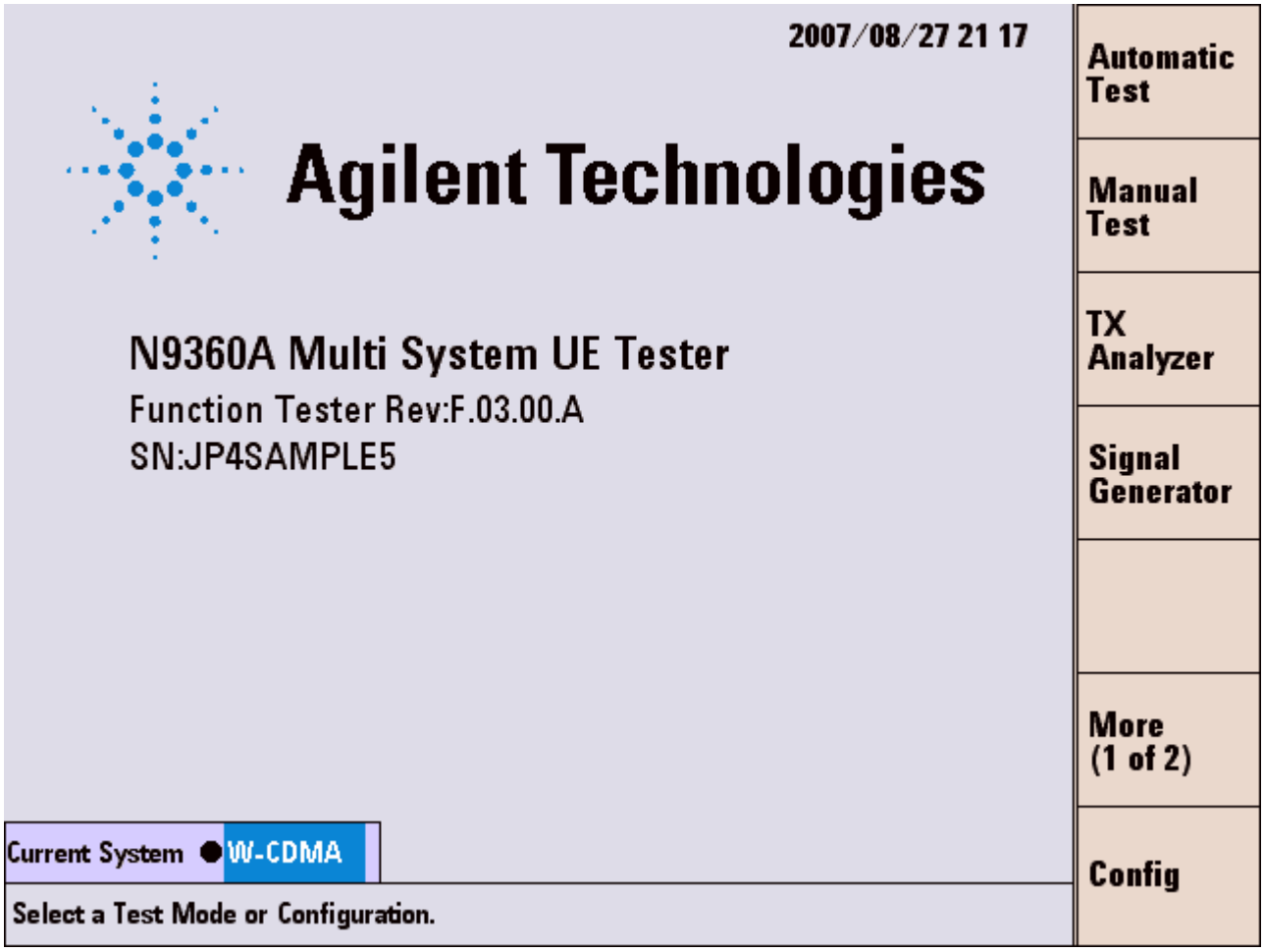


Figure 4-35 [Initial] Screen

3 Set path loss values. Press the **Config**, **Test Condition** and **Loss** softkeys to display the [Configuration: Test Condition(Loss)] screen.

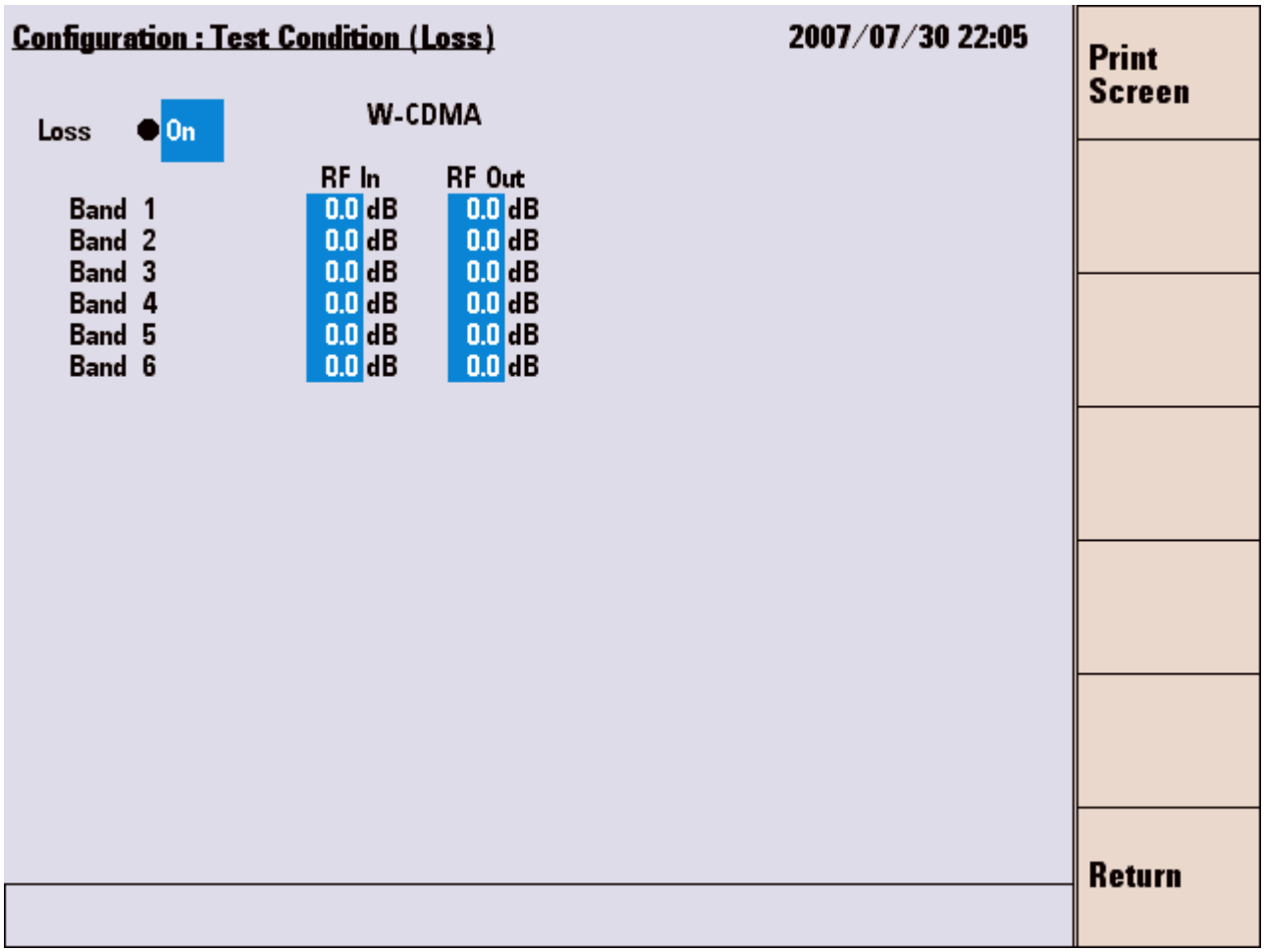


Figure 4-36 [Configuration: Test Condition (Loss)] Screen

4 Set required parameters for Manual Test.

Press the **Return** softkey to display the [Configuration: Test Condition] screen.

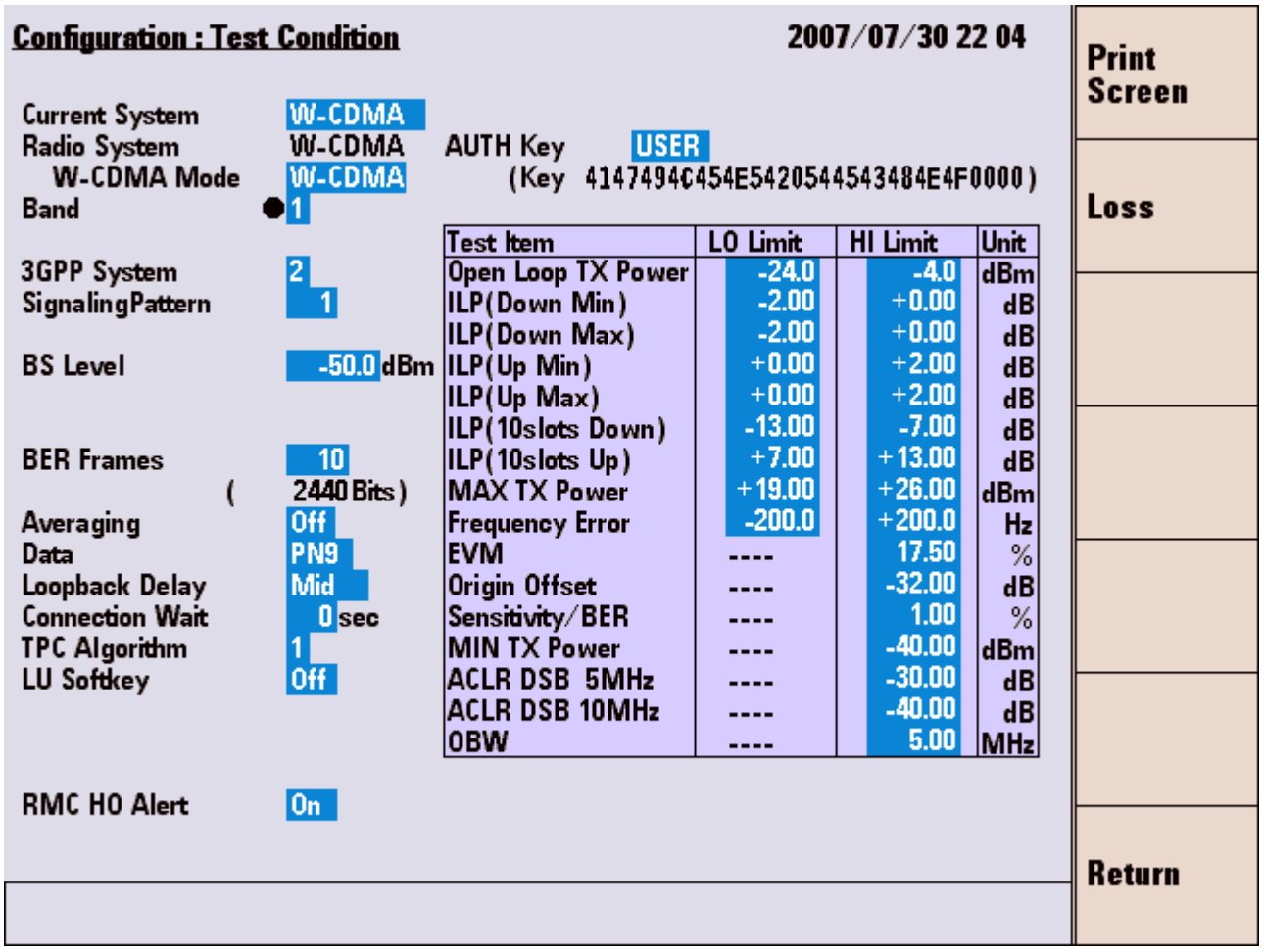

Configuration : Test Condition
2007/07/30 22 04
Current System W-CDMA
Radio System W-CDMA
W-CDMA Mode W-CDMA
Band 1
AUTH Key USER
(Key 4147494C454E5420544543484E4F0000)
3GPP System 2
SignalingPattern 1
BS Level -50.0 dBm
BER Frames 10
(2440 Bits)
Averaging Off
Data PN9
Loopback Delay Mid
Connection Wait 0 sec
TPC Algorithm 1
LU Softkey Off
RMC HO Alert On
Test Item | LO Limit | HI Limit | Unit
Open Loop TX Power | -24.0 | -4.0 | dBm
ILP(Down Min) | -2.00 | +0.00 | dB
ILP(Down Max) | -2.00 | +0.00 | dB
ILP(Up Min) | +0.00 | +2.00 | dB
ILP(Up Max) | +0.00 | +2.00 | dB
ILP(10slots Down) | -13.00 | -7.00 | dB
ILP(10slots Up) | +7.00 | +13.00 | dB
MAX TX Power | +19.00 | +26.00 | dBm
Frequency Error | -200.0 | +200.0 | Hz
EVM | ---- | 17.50 | %
Origin Offset | ---- | -32.00 | dB
Sensitivity/BER | ---- | 1.00 | %
MIN TX Power | ---- | -40.00 | dBm
ACLR DSB 5MHz | ---- | -30.00 | dB
ACLR DSB 10MHz | ---- | -40.00 | dB
OBW | ---- | 5.00 | MHz
Print Screen
Loss
Return

Figure 4-37 [Configuration: Test Condition] Screen

5 Set the input fields with the CURSOR CONTROL knob. Set the **GSM mode** to GSM.

6 Change the Current System to GSM and set the required parameters such as Loss value of GSM. Refer to the *N9360A Multi UE Tester GSM User Manual* for GSM settings. Return the Current System to W-CDMA after set-up is completed.

7 Start Manual Test.
Press the **Return** twice and then the **Manual Test** softkeys to start Manual Test. The [Manual Test: Stand-by] screen shown in Figure 4-38 is displayed.

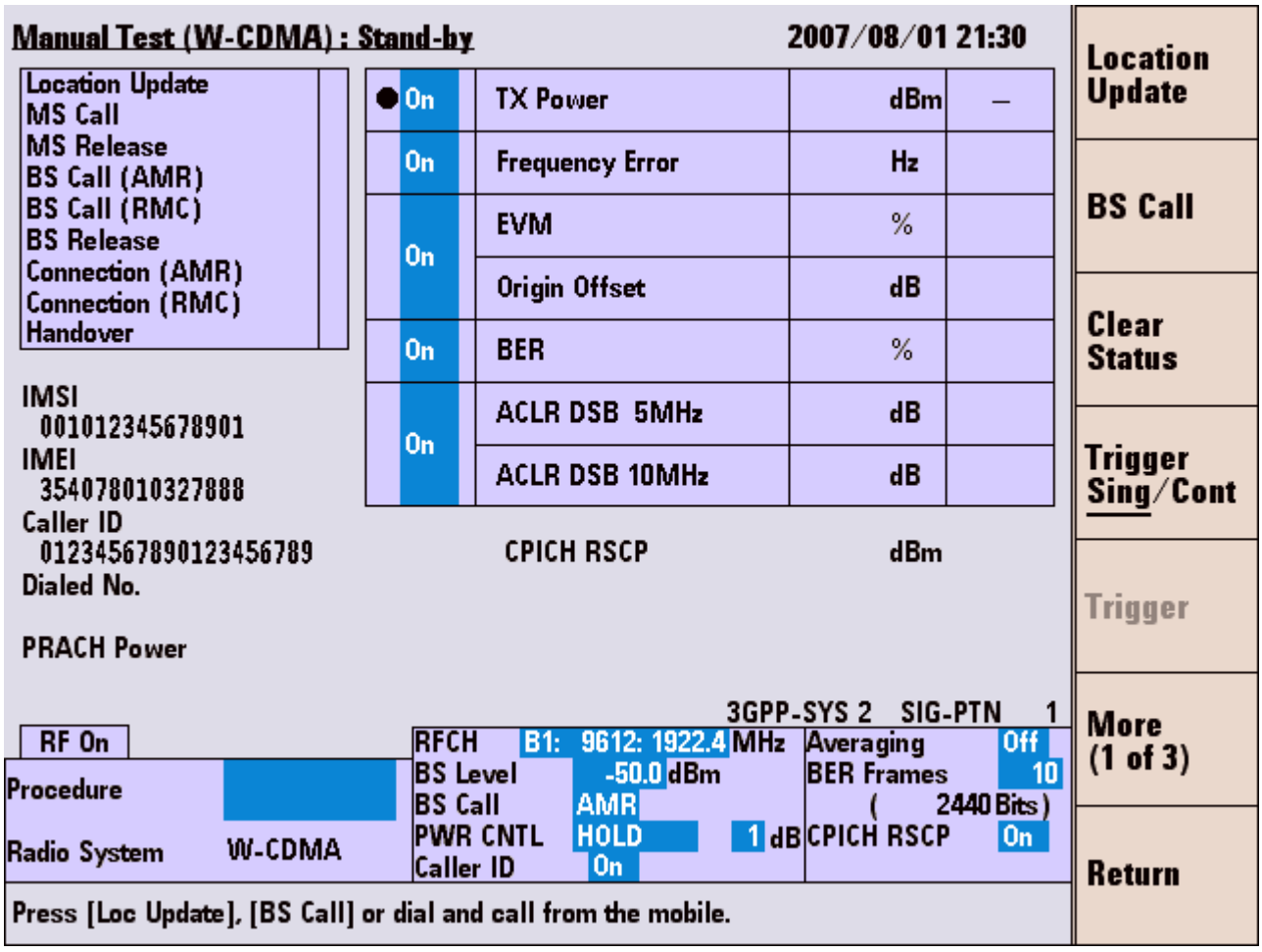


Figure 4-38 [Manual Test: Stand-by] Screen

8 Set the input fields.
Set the "BS Call" field to "RMC".

9 Set required parameters for GSM. Press **More (1 of 2)**, **System>>** and **GSM** softkeys to display Manual Test (GSM) screen. Refer to the *N9360A Multi UE Tester GSM User Manual* for GSM settings. Press **More (1 of 2)**, **System>>** and **W-CDMA** softkey to return to W-CDMA.

10 Turn on the mobile phone. The display status changes from Stand-by to Measuring. After completion of location update, the display status returns to Stand-by.

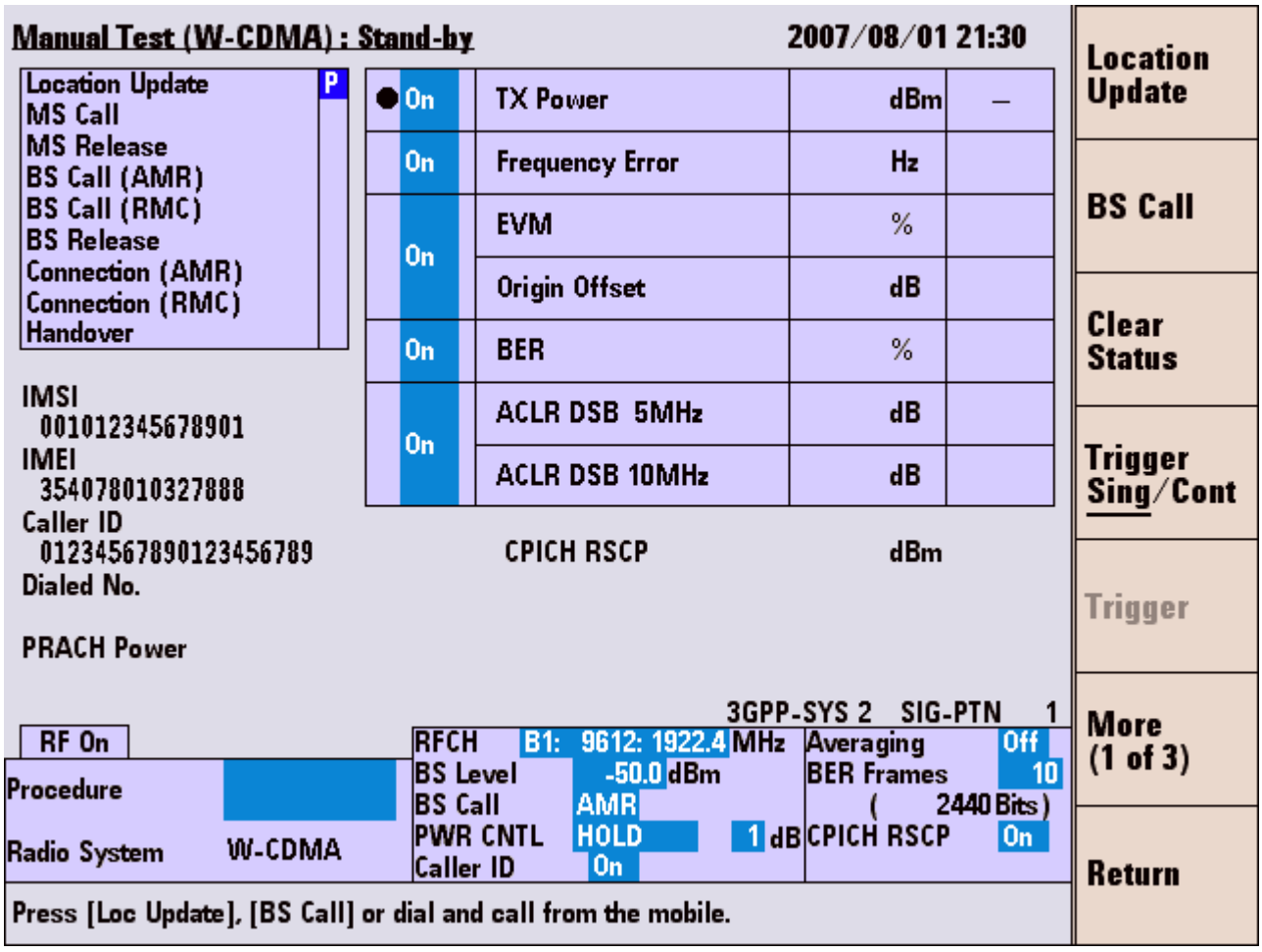


Figure 4-39 [Manual Test: Measuring] Location Update Screen

11 Press the **BS Call** softkey to start BS Call (RMC). RFCH Power is measured. Also, CPICH RSCP is reported from the mobile phone when the **CPICH RSCP** field is set to `On`. The mobile phone automatically responds to the call from the Tester.

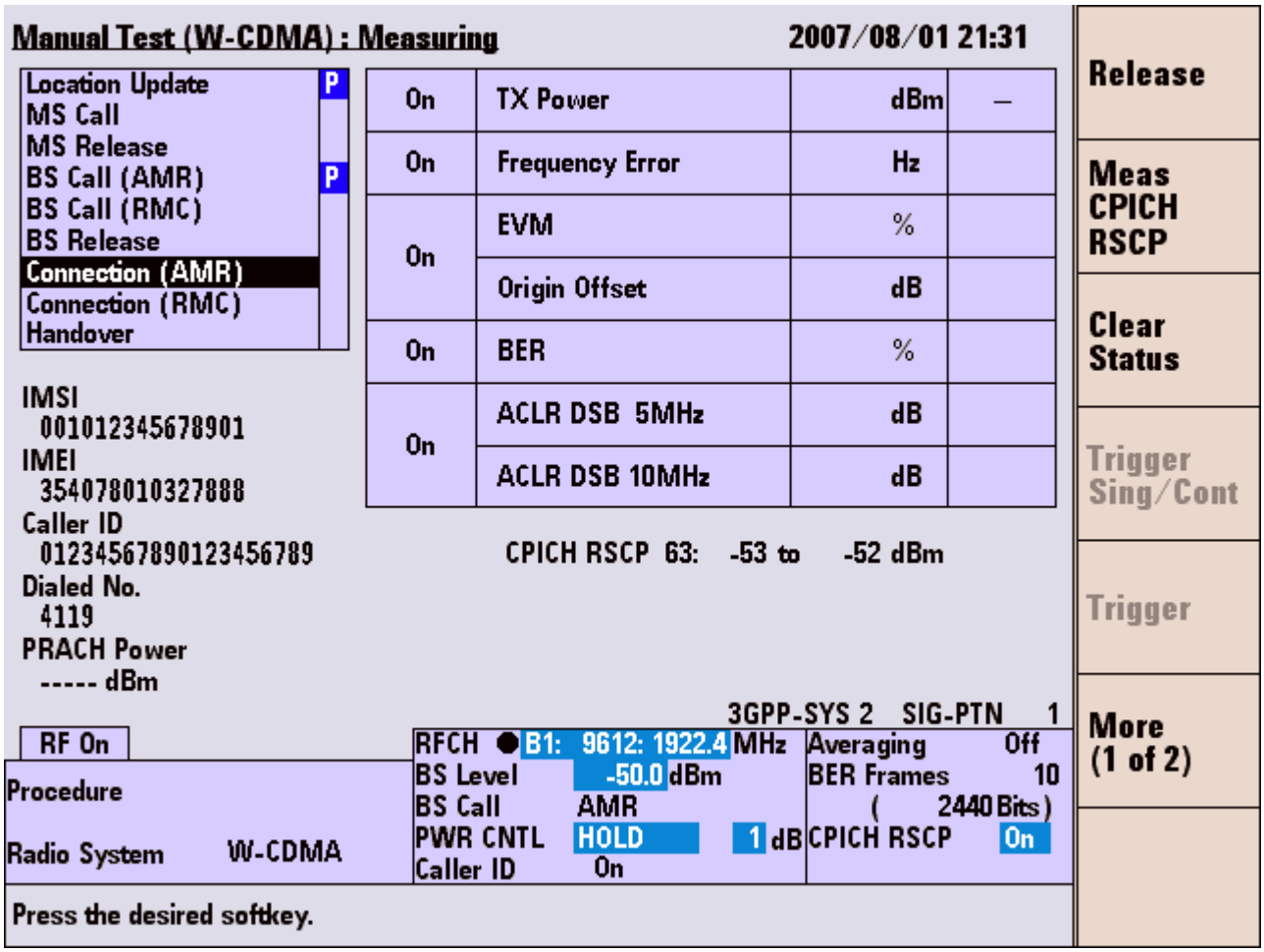


Figure 4-40 [Manual Test: Measuring] Connection Screen

12 Change the channel with the following operation.

Move the cursor to **RFCH** input field and press the CURSOR CONTROL knob. Rotate the CURSOR CONTROL knob to select the channel for handover. Press the CURSOR CONTROL knob. Then, the **Handover** step is highlighted and the channel changes to the selected channel. When handover is completed, **P** is shown at the **Handover** step.

13 Press **More (1 of 2) > System H.O.** softkeys to start system handover. The mobile phone automatically responds to the call from the Tester.

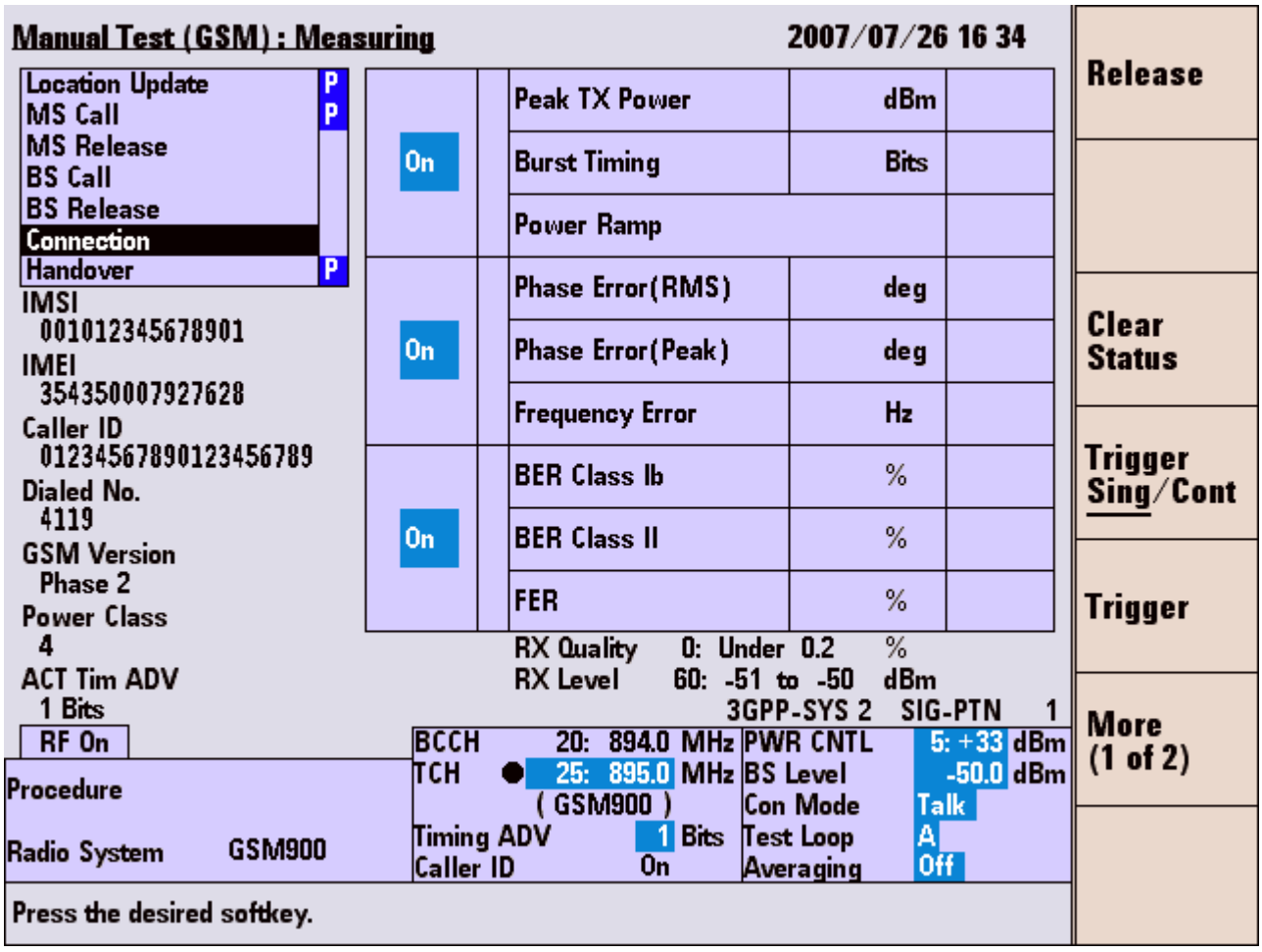


Figure 4-41 [Manual Test (GSM): Measuring] Screen

14 Voice check and performance measurement can be executed on the GSM screen. Refer to the *N9360A Multi UE Tester GSM User Manual*.

15 Finish the call. Press the **Release** softkey to start BS Release.

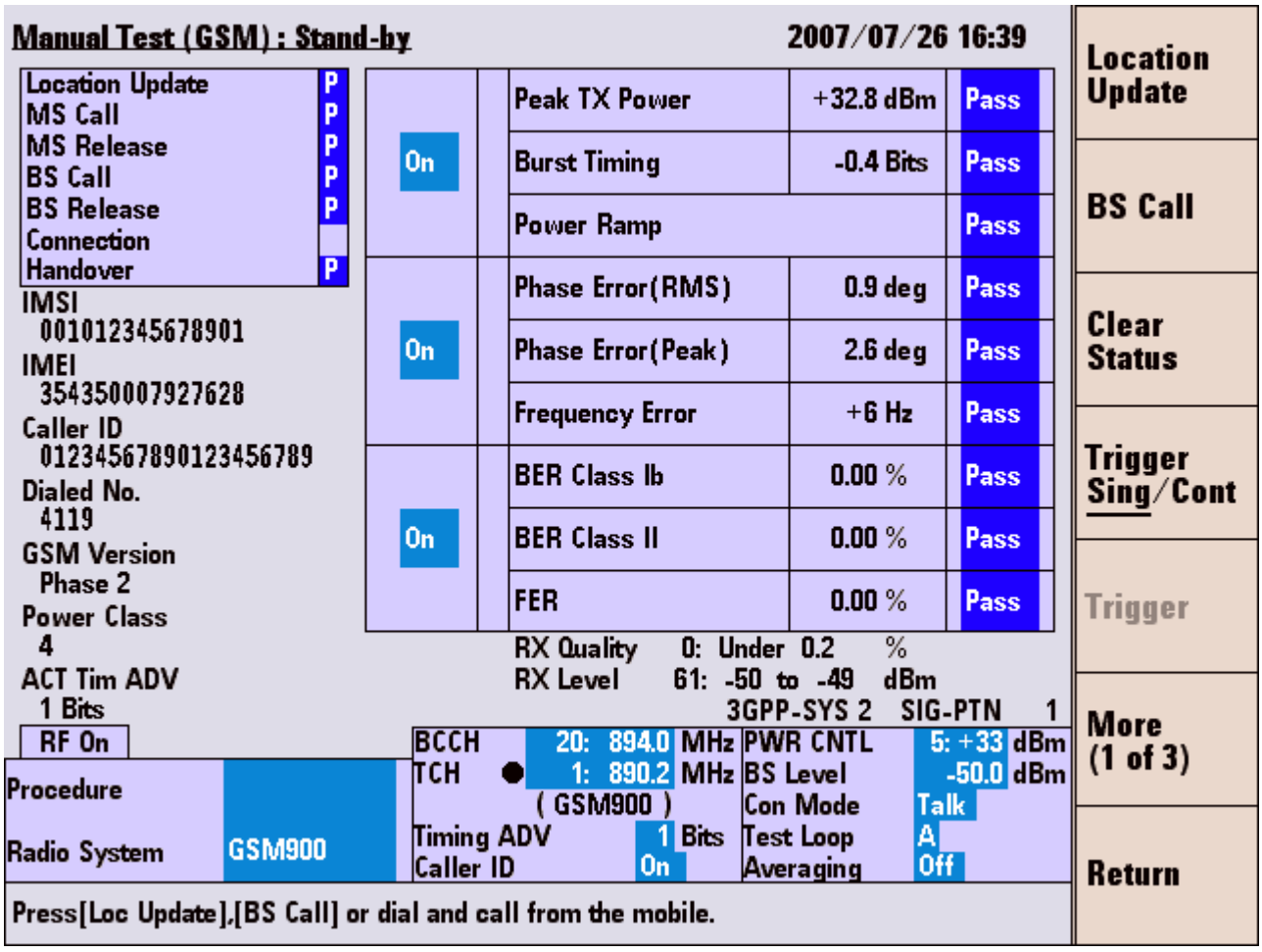


Figure 4-42 [Manual Test: Stand-by] Screen After BS Release

16 The user can save this test procedure in the HDD inside the tester or a USB memory device. Refer to "Saving Test Setup File" on page 5-171.

Emergency Call

NOTE

To test the emergency call function, place the mobile phone and the Tester where the radio signal (electromagnetic wave) base station of a cell phone operator does not propagate, such as in a shield room, an anechoic chamber, etc.

Execute the test of emergency call without any USIM.

1. Turn on the Tester and select the W-CDMA system on the [Top Menu] screen. Refer to ""System Selection" on page 4-14 about selection of the system.
2. The [Initial] screen as Figure 4-43 is displayed after completion of initialization and self-test routine of the Tester.

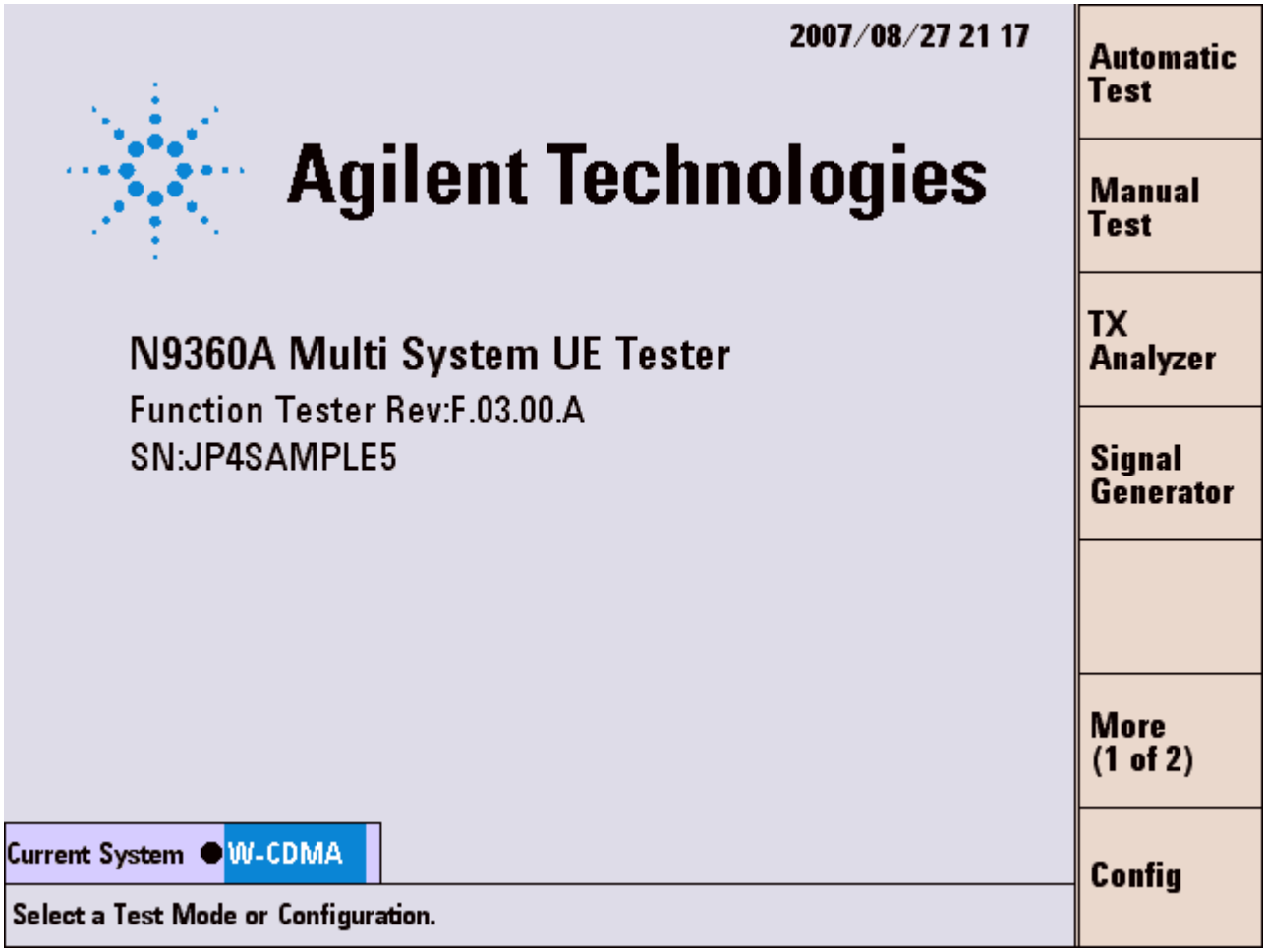


Figure 4-43 [Initial] Screen

3 Step 3.Set path loss values. Press the **Config**, **Test Condition** and **Loss** softkeys to display the [Configuration: Test Condition(Loss)] screen.

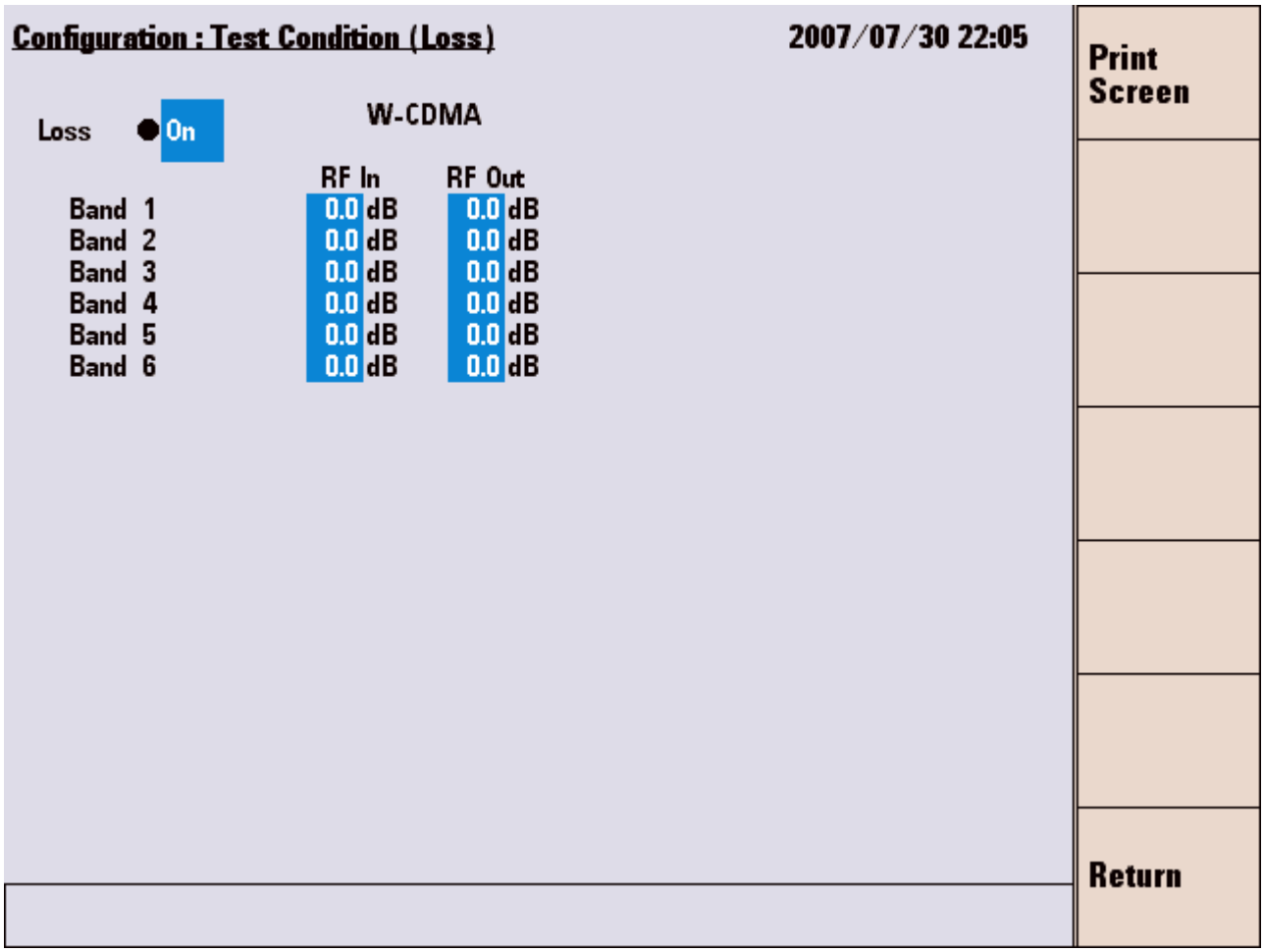


Figure 4-44 [Configuration: Test Condition (Loss)] Screen

4 Set required parameter for Manual Test. Press the **Return** softkey to display the [Configuration: Test Condition] screen.

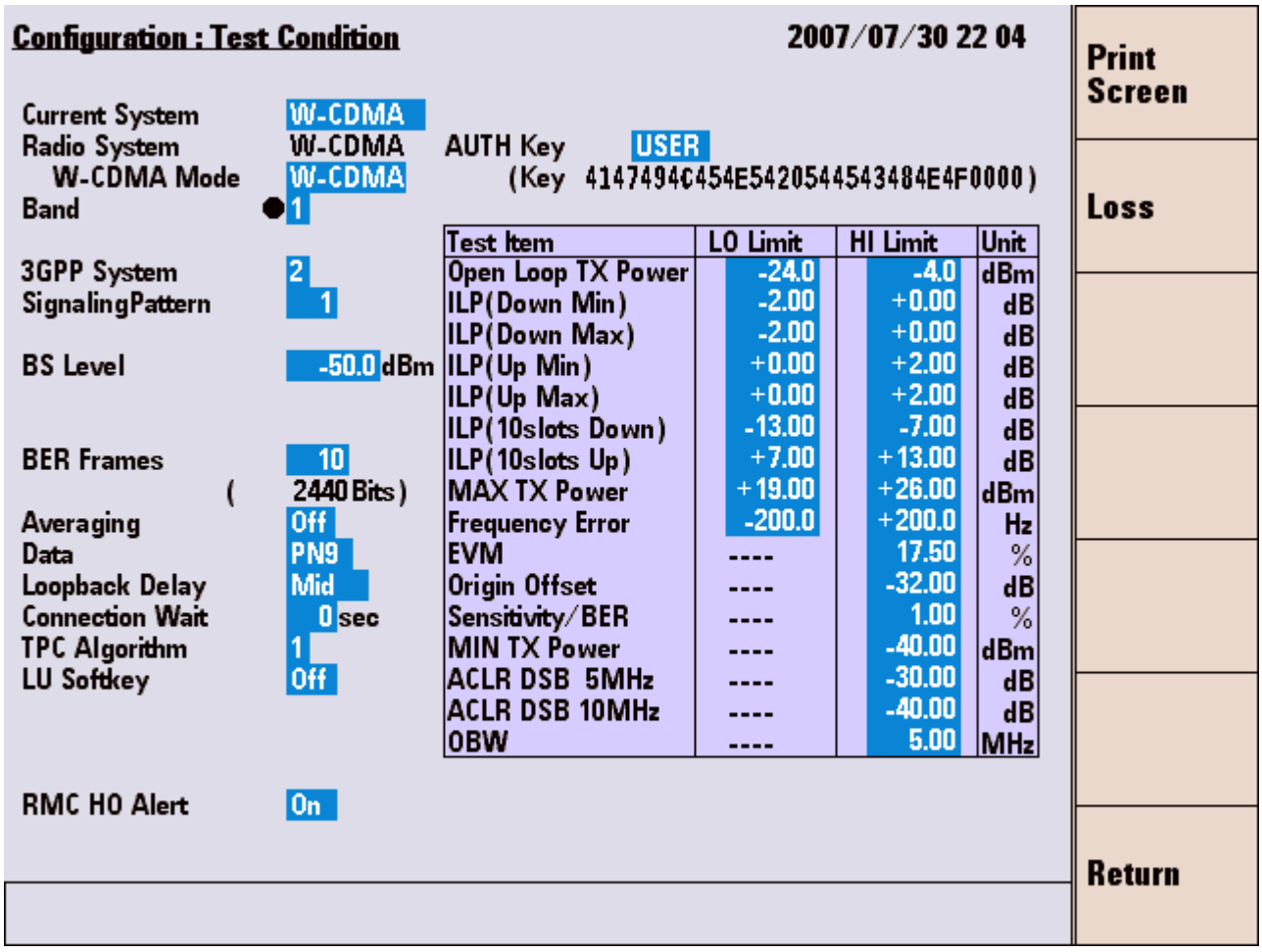

Configuration : Test Condition
2007/07/30 22 04
Current System W-CDMA
Radio System W-CDMA
W-CDMA Mode W-CDMA
Band 1
AUTH Key USER
(Key 4147494C454E5420544543484E4F0000)
3GPP System 2
SignalingPattern 1
BS Level -50.0 dBm
BER Frames 10
(2440 Bits)
Averaging Off
Data PN9
Loopback Delay Mid
Connection Wait 0 sec
TPC Algorithm 1
LU Softkey Off
RMC HO Alert On
Test Item | LO Limit | HI Limit | Unit
Open Loop TX Power | -24.0 | -4.0 | dBm
ILP(Down Min) | -2.00 | +0.00 | dB
ILP(Down Max) | -2.00 | +0.00 | dB
ILP(Up Min) | +0.00 | +2.00 | dB
ILP(Up Max) | +0.00 | +2.00 | dB
ILP(10slots Down) | -13.00 | -7.00 | dB
ILP(10slots Up) | +7.00 | +13.00 | dB
MAX TX Power | +19.00 | +26.00 | dBm
Frequency Error | -200.0 | +200.0 | Hz
EVM | ---- | 17.50 | %
Origin Offset | ---- | -32.00 | dB
Sensitivity/BER | ---- | 1.00 | %
MIN TX Power | ---- | -40.00 | dBm
ACLR DSB 5MHz | ---- | -30.00 | dB
ACLR DSB 10MHz | ---- | -40.00 | dB
OBW | ---- | 5.00 | MHz
Print Screen
Loss
Return

Figure 4-45 [Configuration: Test Condition] Screen

5 Set the input fields with the CURSOR CONTROL knob. Set the **GSM mode** to `GSM`.

6 Start Manual Test.
Press the **Return** softkey twice and then the **Manual Test** softkey. The Manual Test: Stand-by screen shown in Figure 4-46 is displayed.

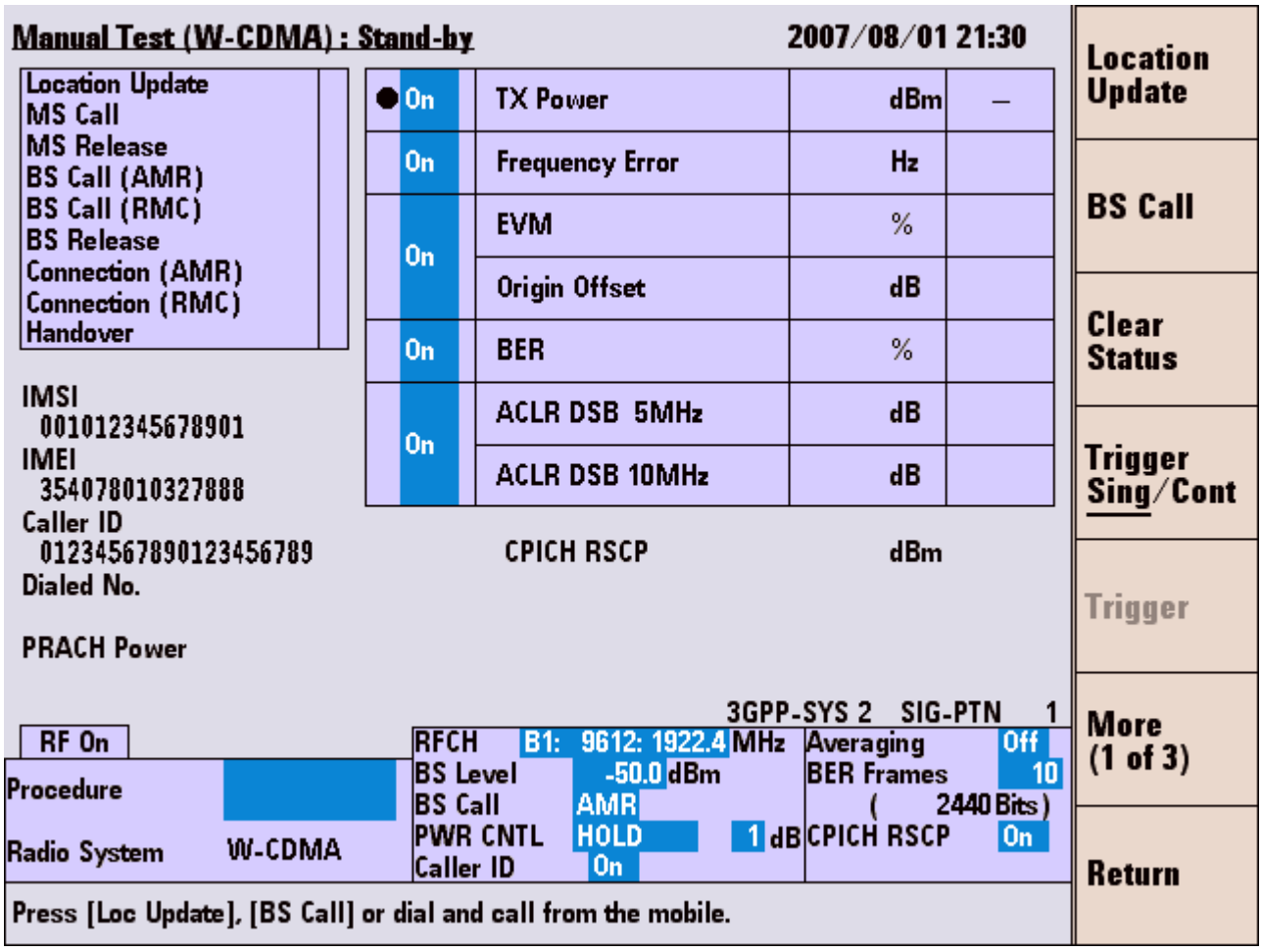


Figure 4-46 [Manual Test: Stand-by] Screen

7 Set the input fields.

8 Turn on the mobile phone.

9 Make an emergency call on the mobile phone to start MS Call. Dial the emergency call number and press an Off Hook button on the mobile phone.

10 If the "Connection Wait" field on the: Test Condition screen is set to any number other than 0, the **Answer** softkey is displayed when manually responding to the call from the mobile phone becomes accepted on the tester. Press the **Answer** softkey within the specified time to respond to MS Call. When the specified time is over, the tester automatically responds to MS Call. If the "Connection Wait" field is set to 0, the Tester automatically responds to the call immediately.

11 When MS Call connects, the screen in Figure 4-47 is displayed. "Emergency Call" is displayed at the "Dialed No.:" field on the screen. CPICH RSCP is reported from the mobile phone when the "CPICH RSCP" field is set to "On".

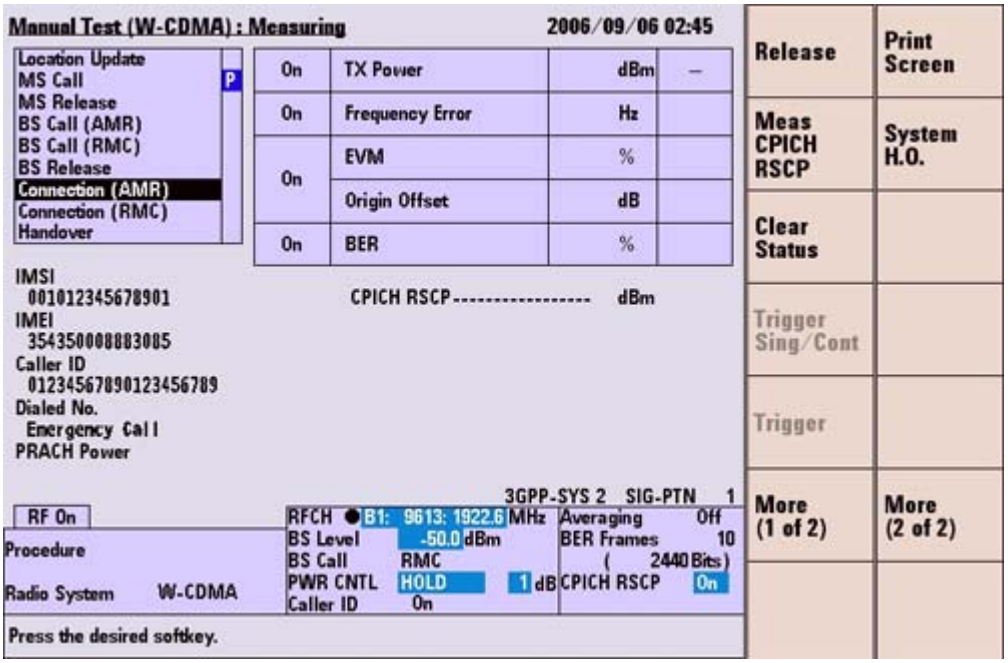


Figure 4-47 [Manual Test: Measuring] Emergency Call Screen

12 At the "Connection (AMR)" step, the Tester returns voice back to the mobile phone. Check the voice quality.

13 Also, CPICH RSCP can be measured at the "Connection (AMR)" step. Press the **Measurement CPICH RSCP** softkey to make the mobile phone report the value of CPICH RSCP, and then the value will be displayed.

14 Finish the call.
Press an On Hook button on the mobile phone to start MS Release, or press the **Release** softkey to start BS.

15 The user can save this test procedure in the HDD inside the Tester or a USB memory device. Refer to "Saving Test Setup File" on page 5-171.

Testing a Mobile Phone by Manual Test (HSDPA Mode)

NOTE Install the Option W06 when using the HSDPA function.

This section describes the operation method of the Manual Test HSDPA mode.

1. Turn on the Tester and select the W-CDMA system on the Top menu screen. Refer to "System Selection" on page 4-14 about selection of the system.
2. The [Initial] screen as Figure 4-48 is displayed after completion of initialization and self-test routine of the Tester.

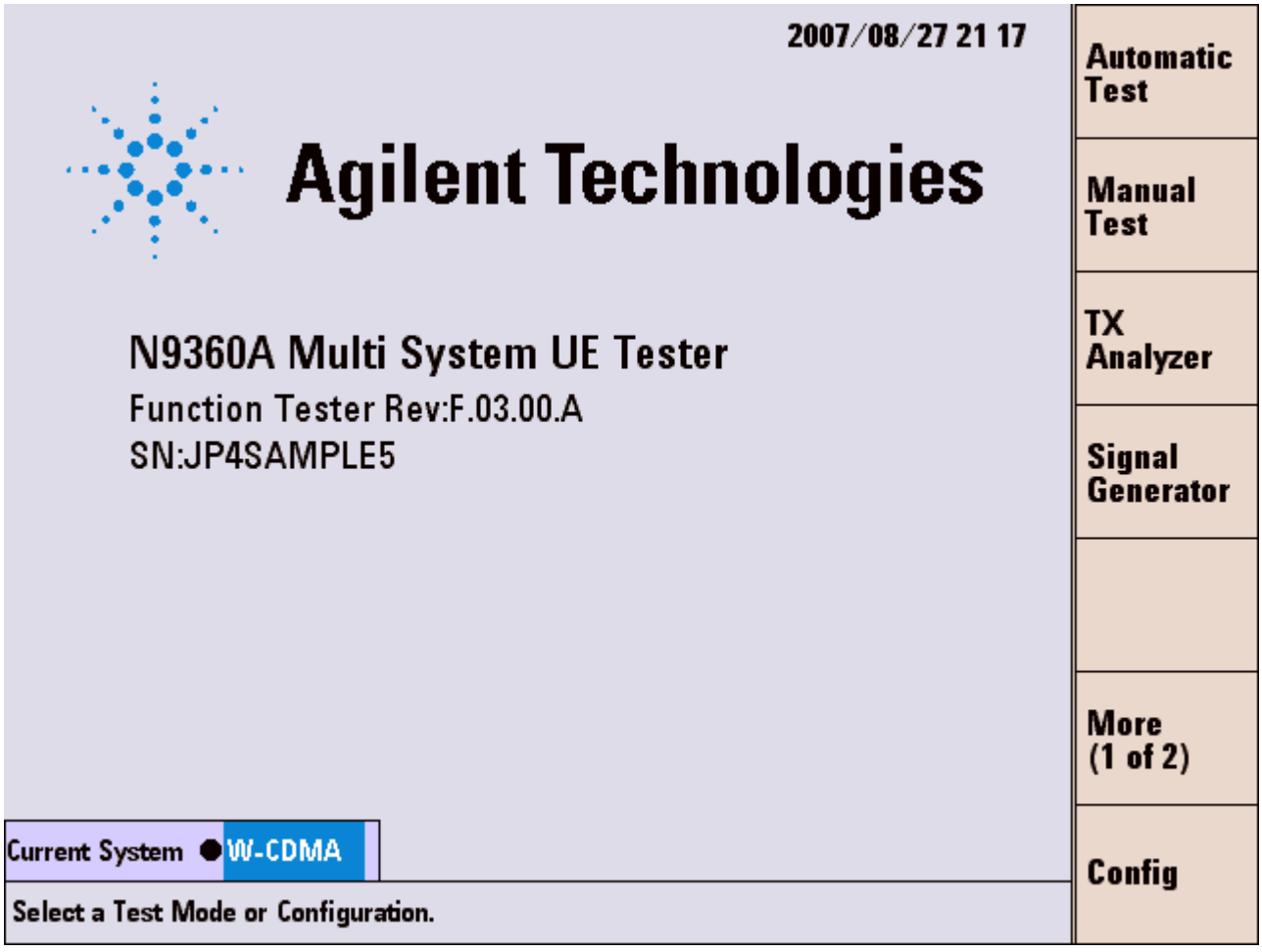


Figure 4-48 [Initial] Screen

3 Set path loss values. Press the **Config**, **Test Condition** and **Loss** softkeys to display the [Configuration: Test Condition(Loss)] screen.

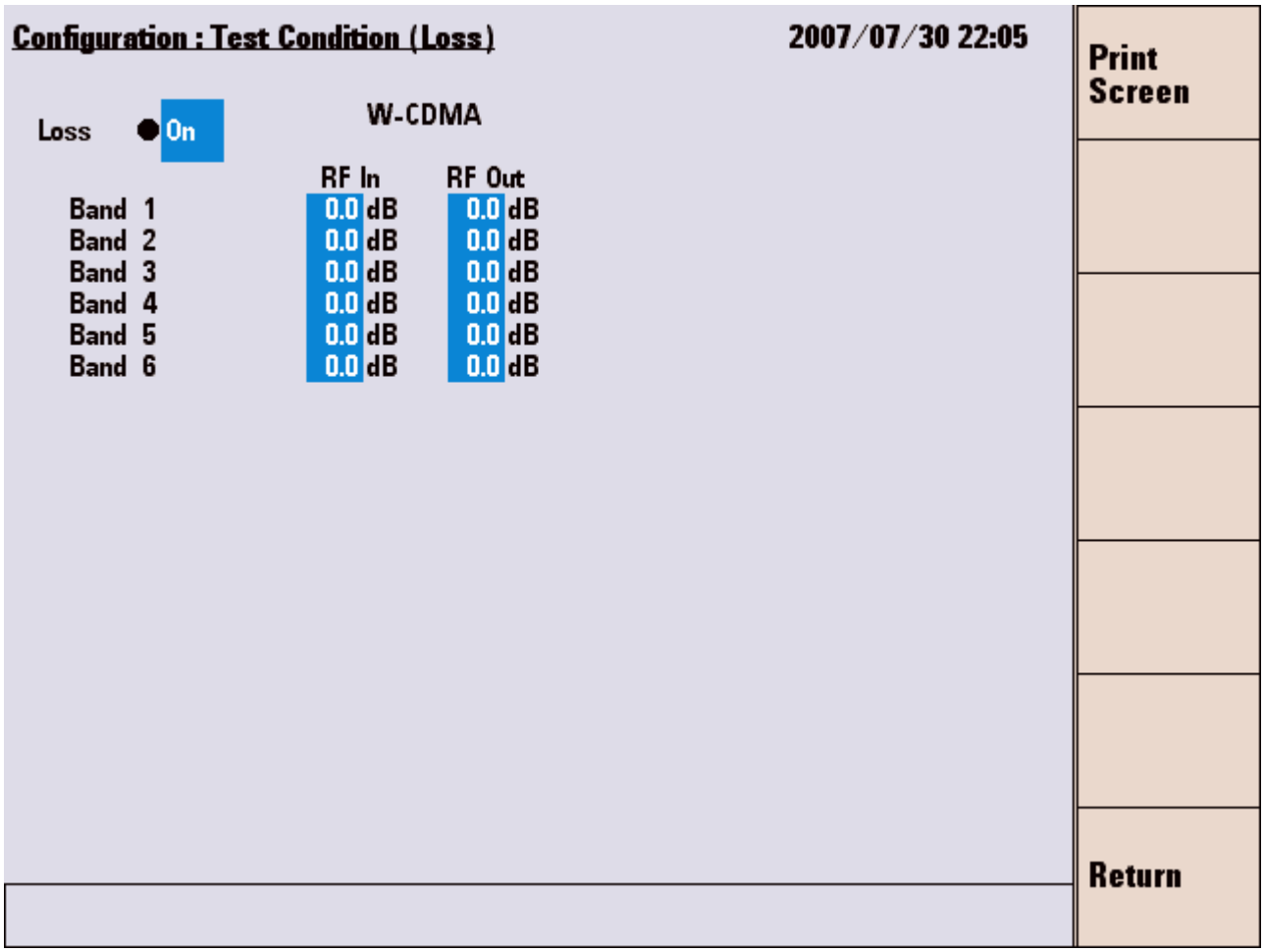


Figure 4-49 [Configuration: Test Condition (Loss)] Screen

4 Step 4.Set required parameters for Manual Test. Press the **Return** softkey to display the [Configuration: Test Condition] screen.

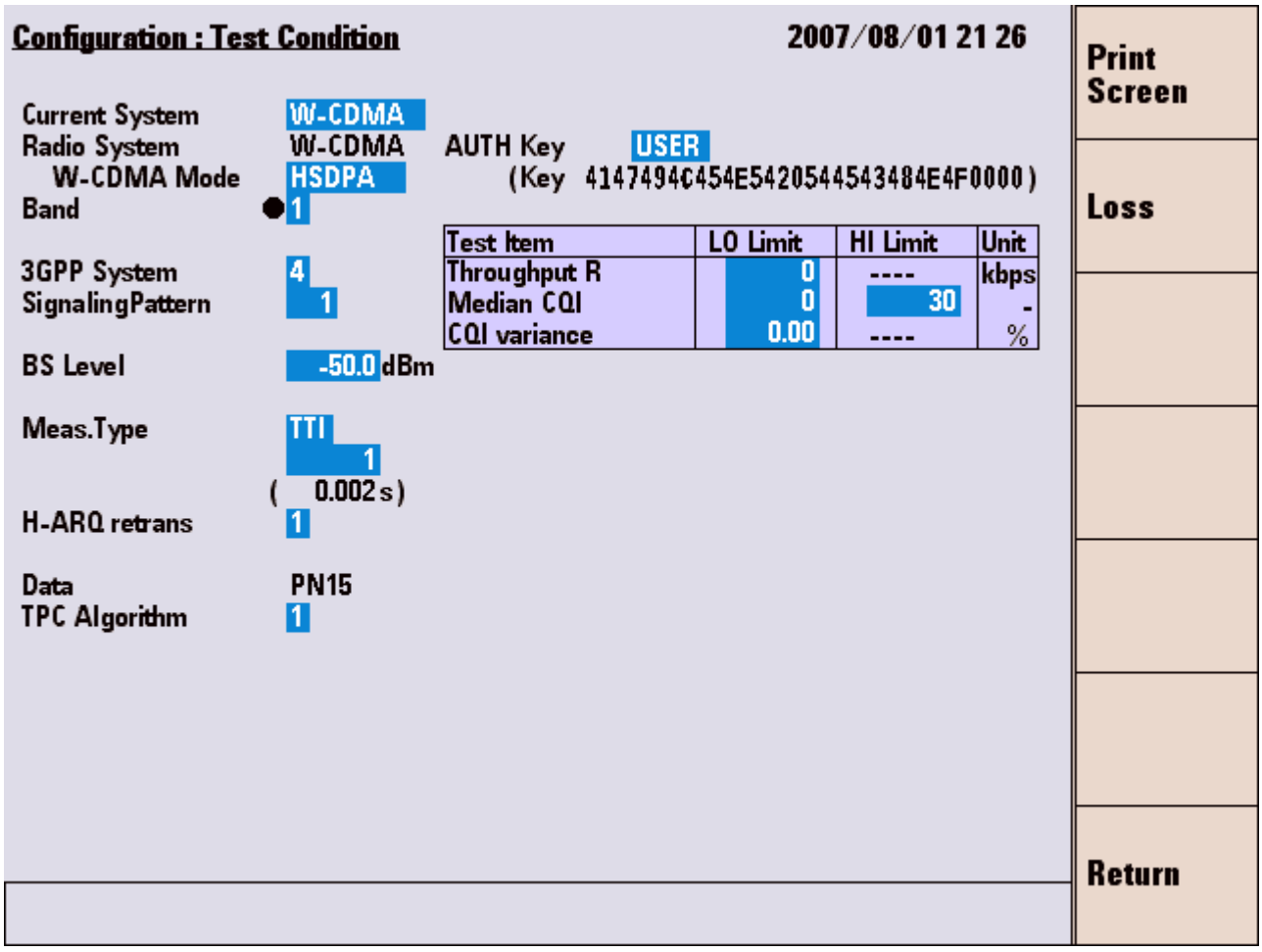


Figure 4-50 [Configuration: Test Condition] Screen (HSDPA)

5 Set the **W-CDMA Mode** to `HSDPA`.

Set the input fields with the CURSOR CONTROL knob.

6 Start Manual Test.

Press the **Return** softkey twice and then the **Manual Test** softkey. The [Manual Test: Stand-by] screen as Figure 4-51 is displayed.

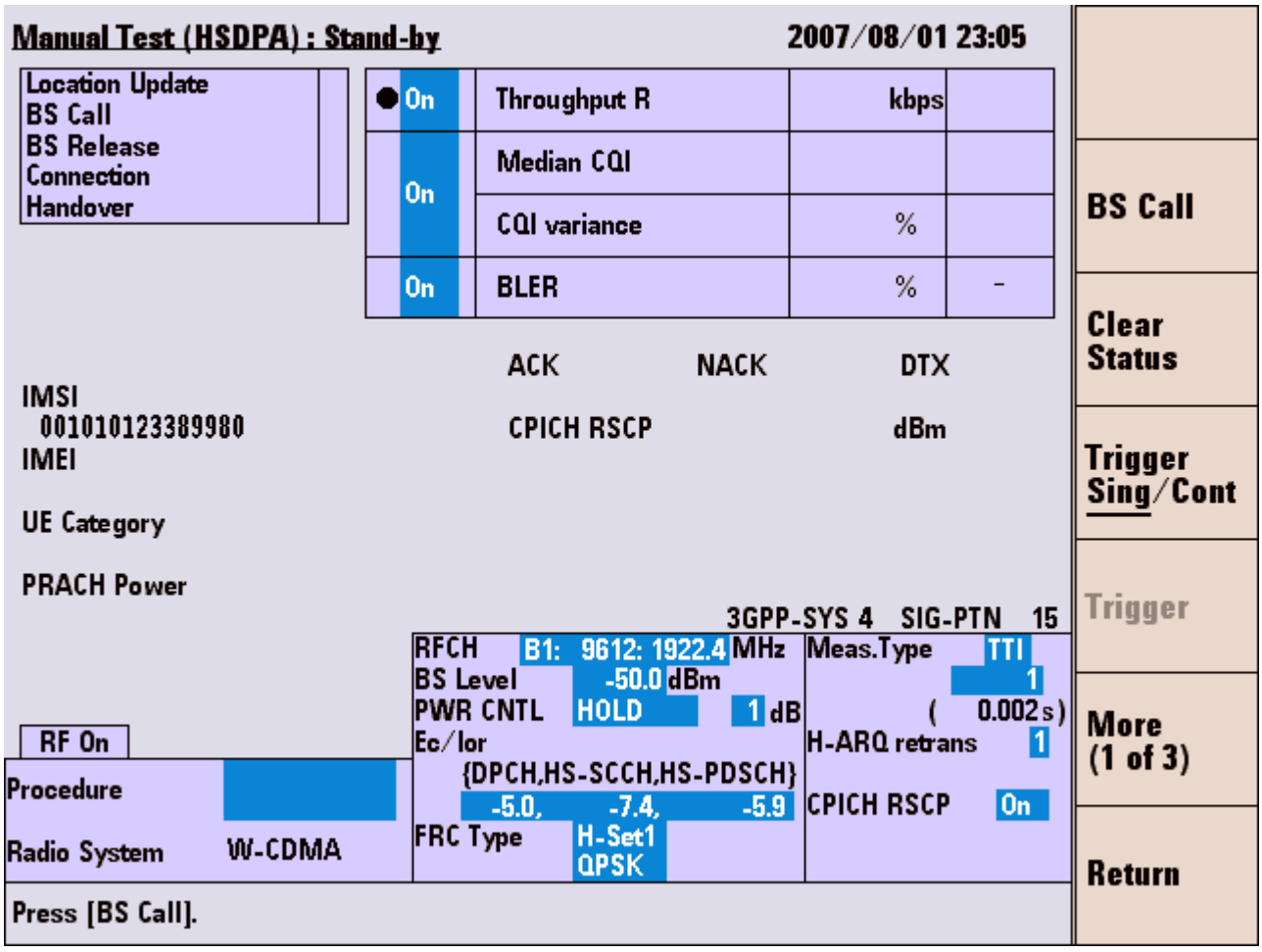


Figure 4-51 [Manual Test: Stand-by] Screen (HSDPA)

7 Set the input fields.

Turn on the mobile phone. The display status changes from Stand-by to Measuring.

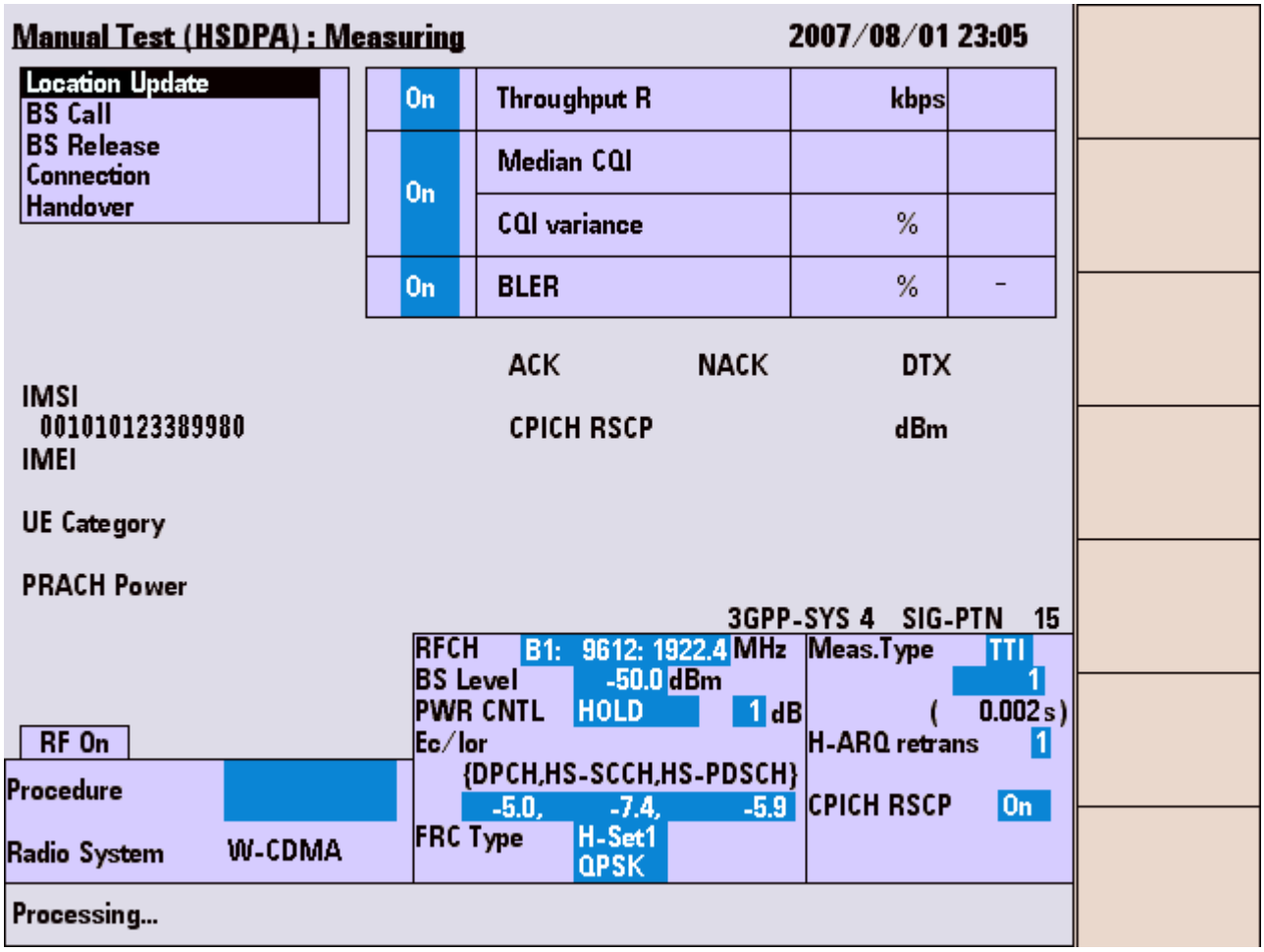


Figure 4-52 [Manual Test: Measuring] Location Update Screen (HSDPA)

8 After completion of location update, the display status returns to Stand-by.

Start BS Call.

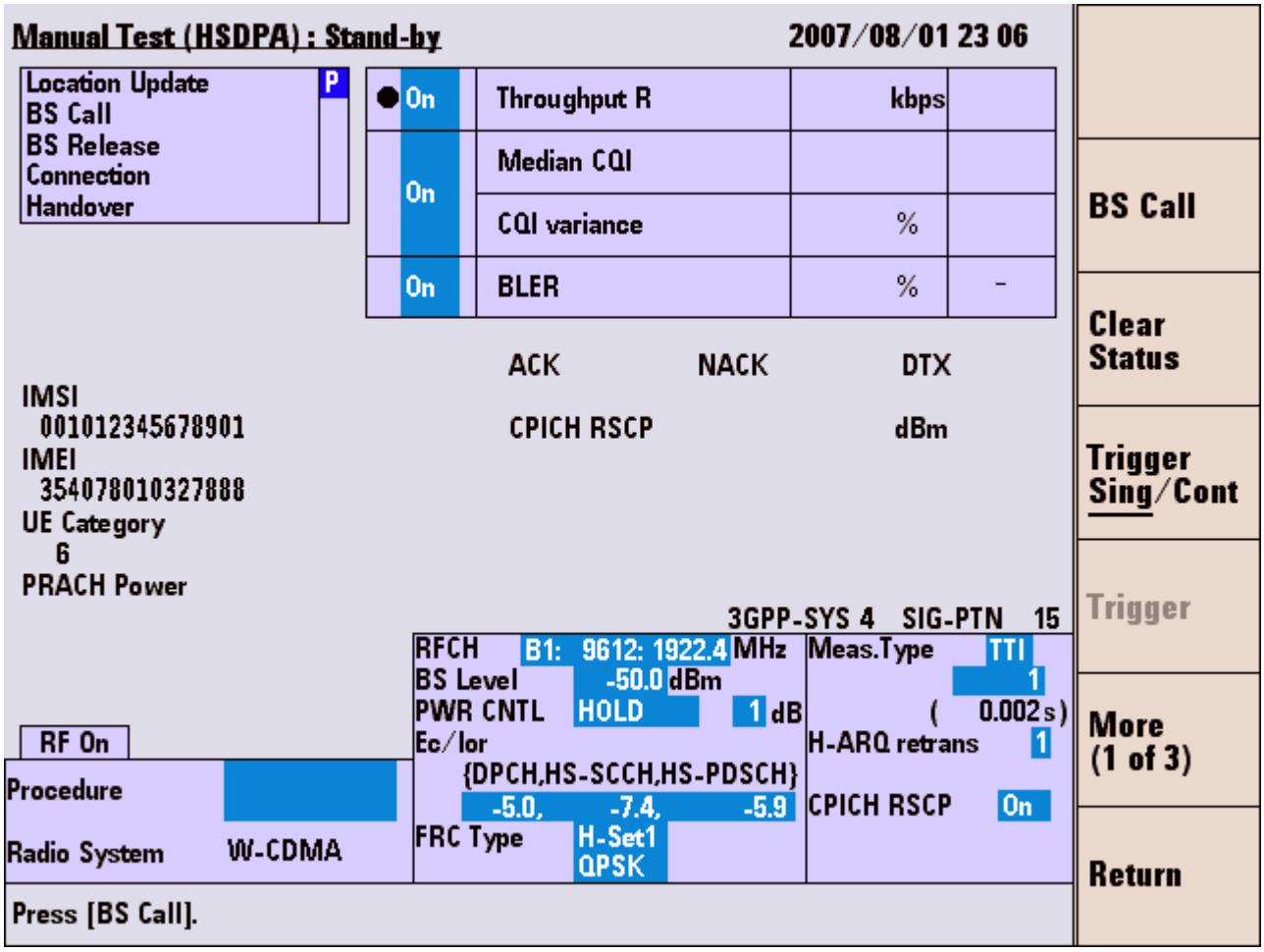


Figure 4-53 [Manual Test: Stand-by] After Location Update Screen (HSDPA)

9 Press the **BS Call** softkey to start BS Call. RFCH Power is measured. Also, CPICH RSCP is reported from the mobile phone when the **CPICH RSCP** field is set to `On`.

10 The mobile phone automatically responds to the call from the Tester.

11 At the **Connection** step, RF Test is executed. Start the measurement with the following softkey operation.

- **Trigger Sing/Cont**: When the trigger mode is **Sing**, single measurement starts when the **Trigger** softkey is pressed.

To change the trigger mode to continuous mode (**Cont**), press the **Trigger Sing/Cont** softkey.

When the trigger mode is **Cont**, continuous measurement starts as soon as the **Connection** step starts.

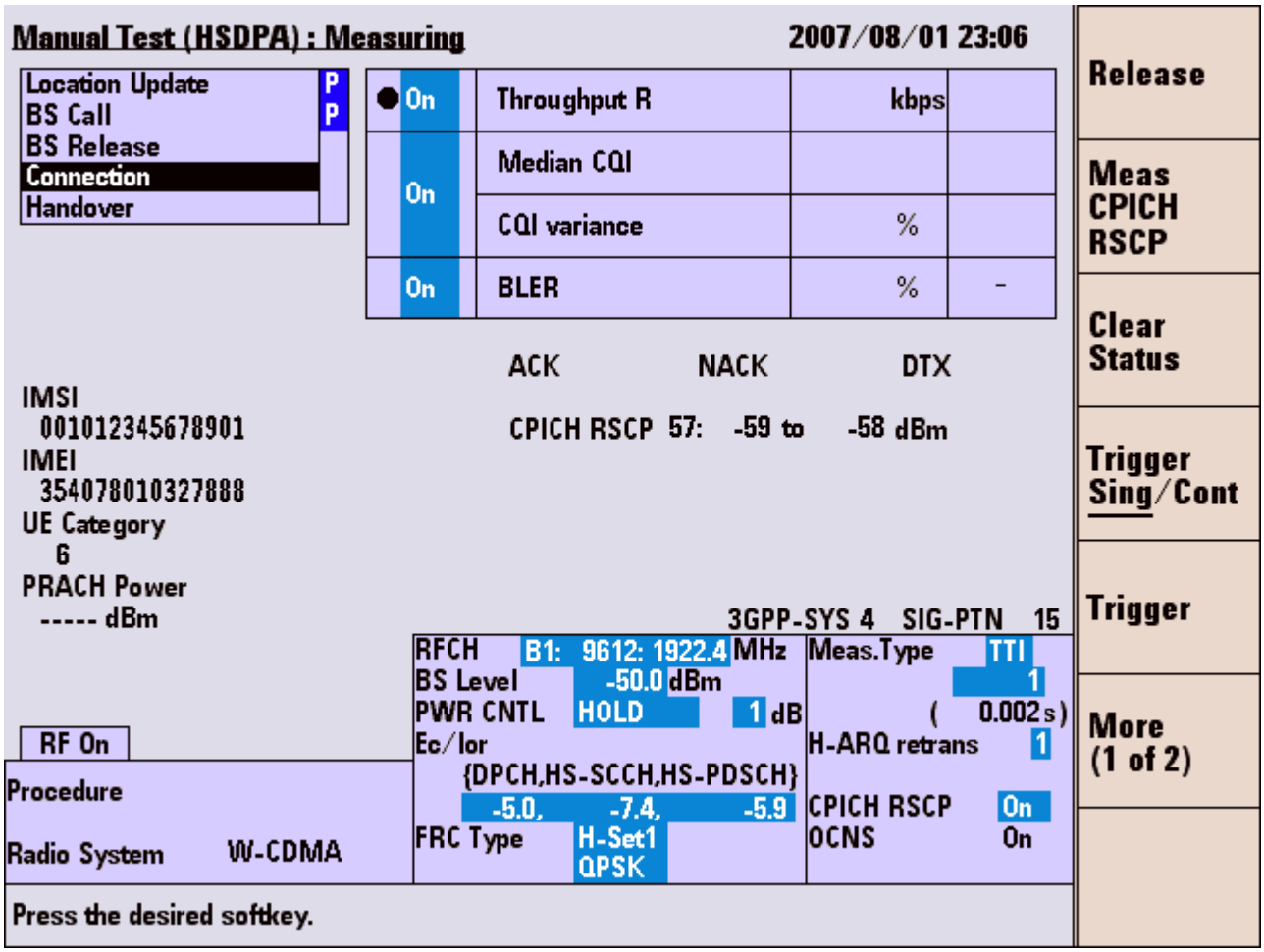


Figure 4-54 [Manual Test: Measuring] Connection Screen (HSDPA)

12 When the trigger mode is **Cont**, press the **Trigger Sing/Cont** softkey to terminate continuous measurement. Measurement value and Pass/Fail results are shown.

13 Also, CPICH RSCP can be measured at the **Connection** step. Press the **Measurement CPICH RSCP** softkey to make the mobile phone report the value of CPICH RSCP, and then the value will be displayed.

14 Finish the call. Press the **Release** softkey to start BS Release.

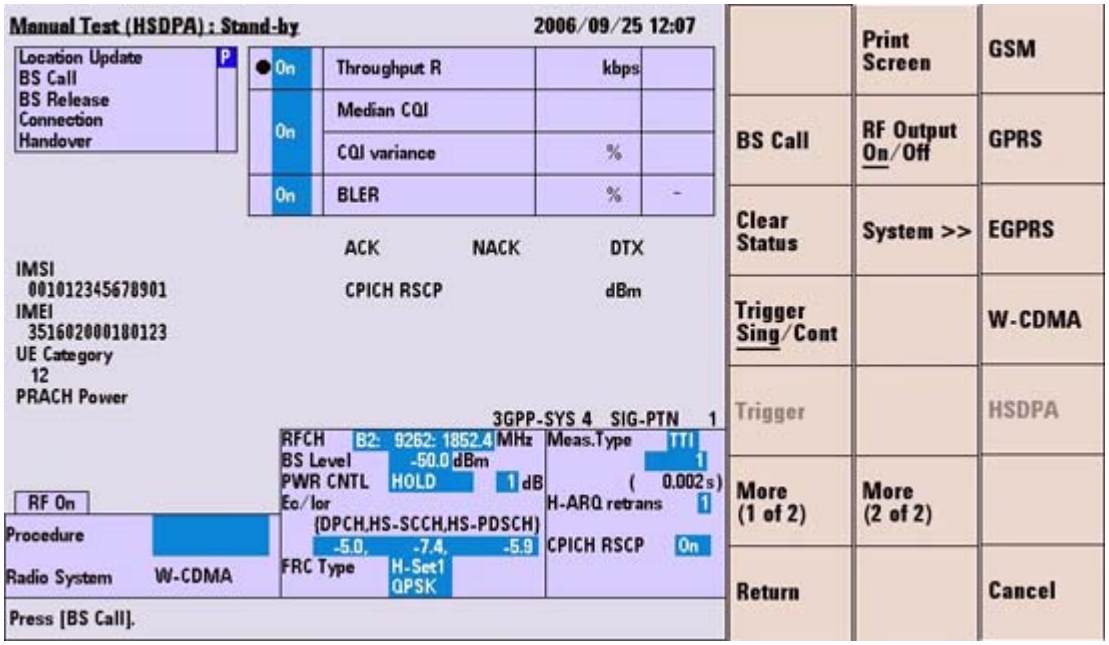


Figure 4-55 [Manual Test: Stand-by] After BS Release Screen (HSDPA)

15 You can save this test procedure in the HDD inside the Tester or a USB memory device. Refer to "Saving Test Setup File" on page 5-171.

Testing a Mobile Phone by TX Analyzer

This section describes the method to test on the mobile phone with the TX Analyzer. Using the TX Analyzer, measurements are executed without the signaling process.

1. Turn on the Tester and select the W-CDMA system on the [Top Menu] screen. Refer to "System Selection" on page 4-14 about selection of the system.
2. The [Initial] screen as Figure 4-56 is displayed after completion of initialization and self-test routine of the Tester.

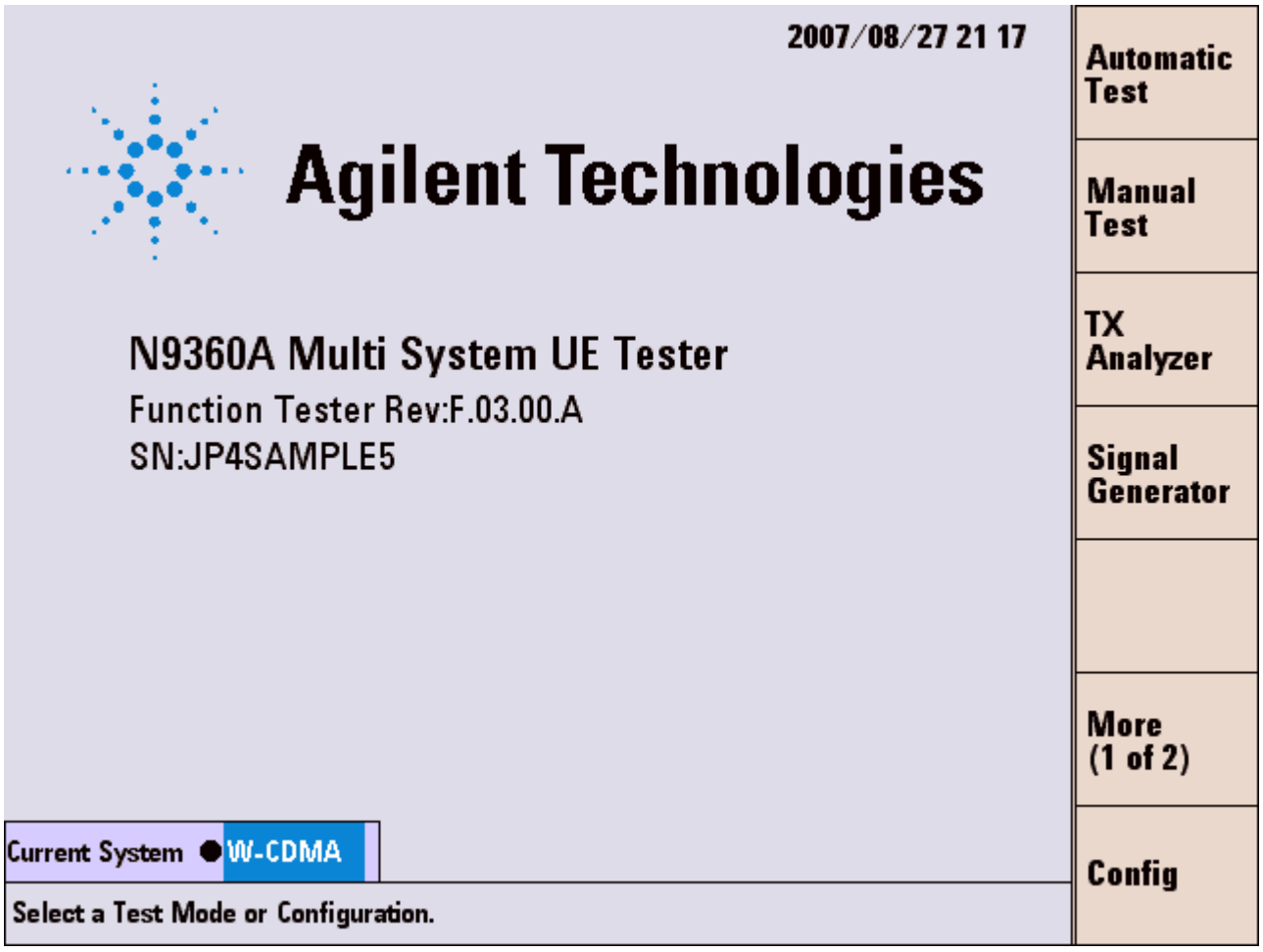


Figure 4-56 [Initial] Screen

3 Set path loss values. Press the **Config**, **Test Condition** and **Loss** softkeys to display the [Configuration: Test Condition(Loss)] screen.

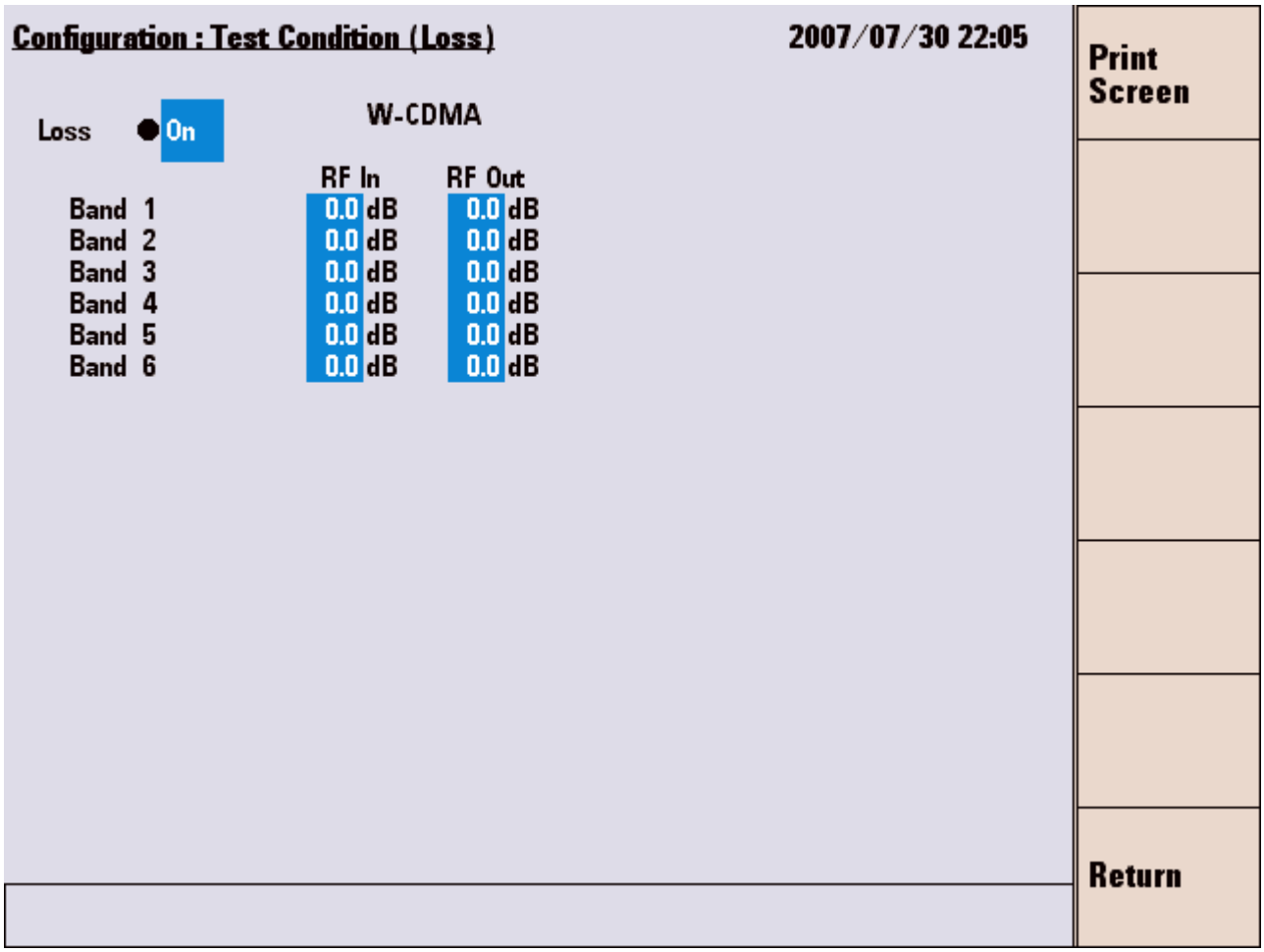


Figure 4-57 [Configuration: Test Condition (Loss)] Screen

4 Set the test condition. Press the **Return** softkey to display the [Configuration: Test Condition] screen. When the Option W07 is installed, the screen as Figure 4-58 is displayed.

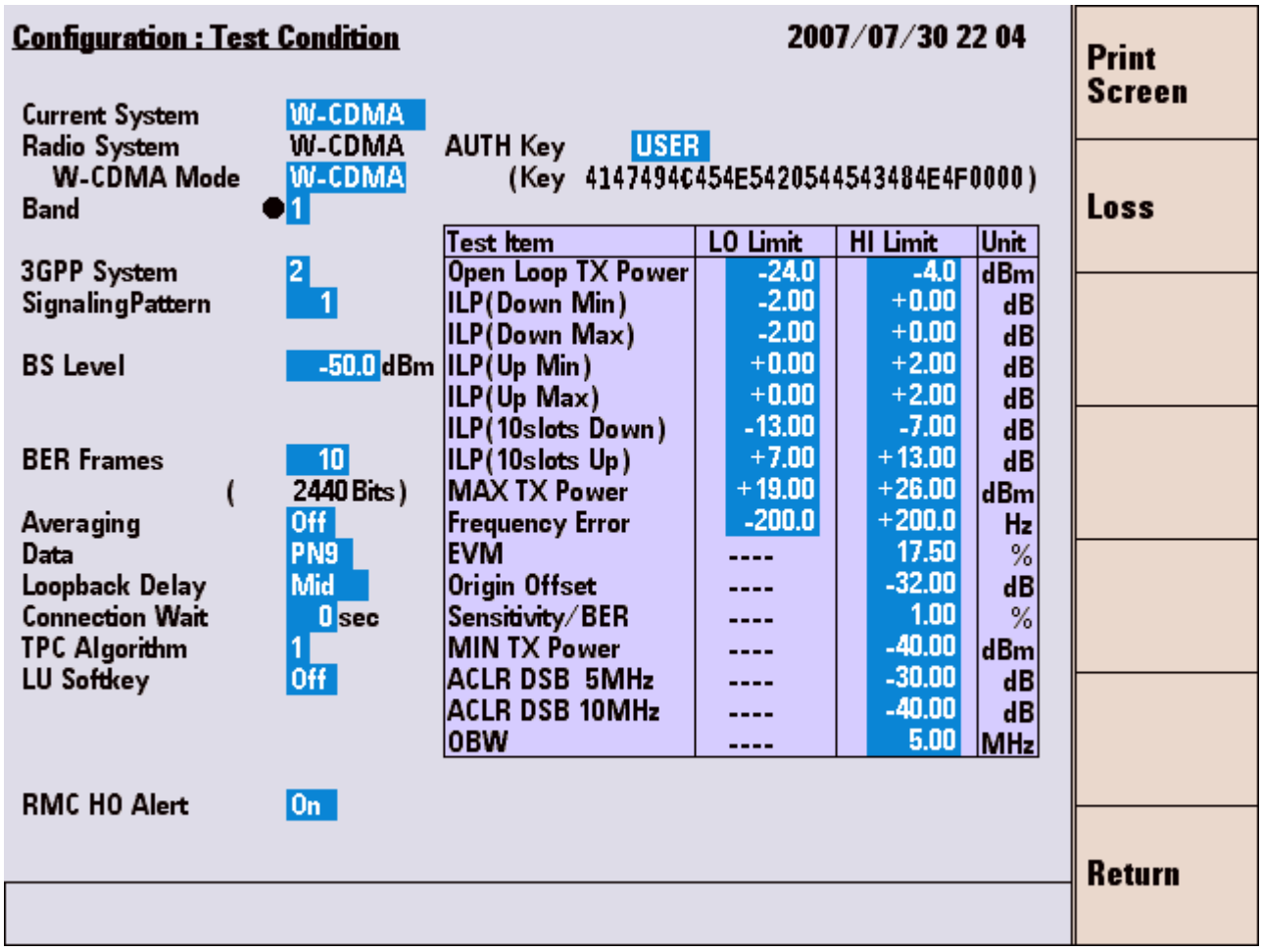

Configuration : Test Condition
2007/07/30 22 04
Current System W-CDMA
Radio System W-CDMA
W-CDMA Mode W-CDMA
Band 1
AUTH Key USER
(Key 4147494C454E5420544543484E4F0000)
3GPP System 2
SignalingPattern 1
BS Level -50.0 dBm
BER Frames 10
(2440 Bits)
Averaging Off
Data PN9
Loopback Delay Mid
Connection Wait 0 sec
TPC Algorithm 1
LU Softkey Off
RMC HO Alert On
Test Item | LO Limit | HI Limit | Unit
Open Loop TX Power | -24.0 | -4.0 | dBm
ILP(Down Min) | -2.00 | +0.00 | dB
ILP(Down Max) | -2.00 | +0.00 | dB
ILP(Up Min) | +0.00 | +2.00 | dB
ILP(Up Max) | +0.00 | +2.00 | dB
ILP(10slots Down) | -13.00 | -7.00 | dB
ILP(10slots Up) | +7.00 | +13.00 | dB
MAX TX Power | +19.00 | +26.00 | dBm
Frequency Error | -200.0 | +200.0 | Hz
EVM | ---- | 17.50 | %
Origin Offset | ---- | -32.00 | dB
Sensitivity/BER | ---- | 1.00 | %
MIN TX Power | ---- | -40.00 | dBm
ACLR DSB 5MHz | ---- | -30.00 | dB
ACLR DSB 10MHz | ---- | -40.00 | dB
OBW | ---- | 5.00 | MHz
Print Screen
Loss
Return

Figure 4-58 [Configuration: Test Condition] Screen

5 Set the input fields except the "BS Level", "BER Frames", "Averaging", "Date", "Loopback Delay" and "TPC Algorithm".

6 Start a test by TX Analyzer.
Press the **Return** softkey twice and then the **TX Analyzer** softkey. The TX Analyzer: Stand-by screen in Figure 4-59 is displayed. Figure 4-59 is the screen of the tester in which the W07 option is not installed.

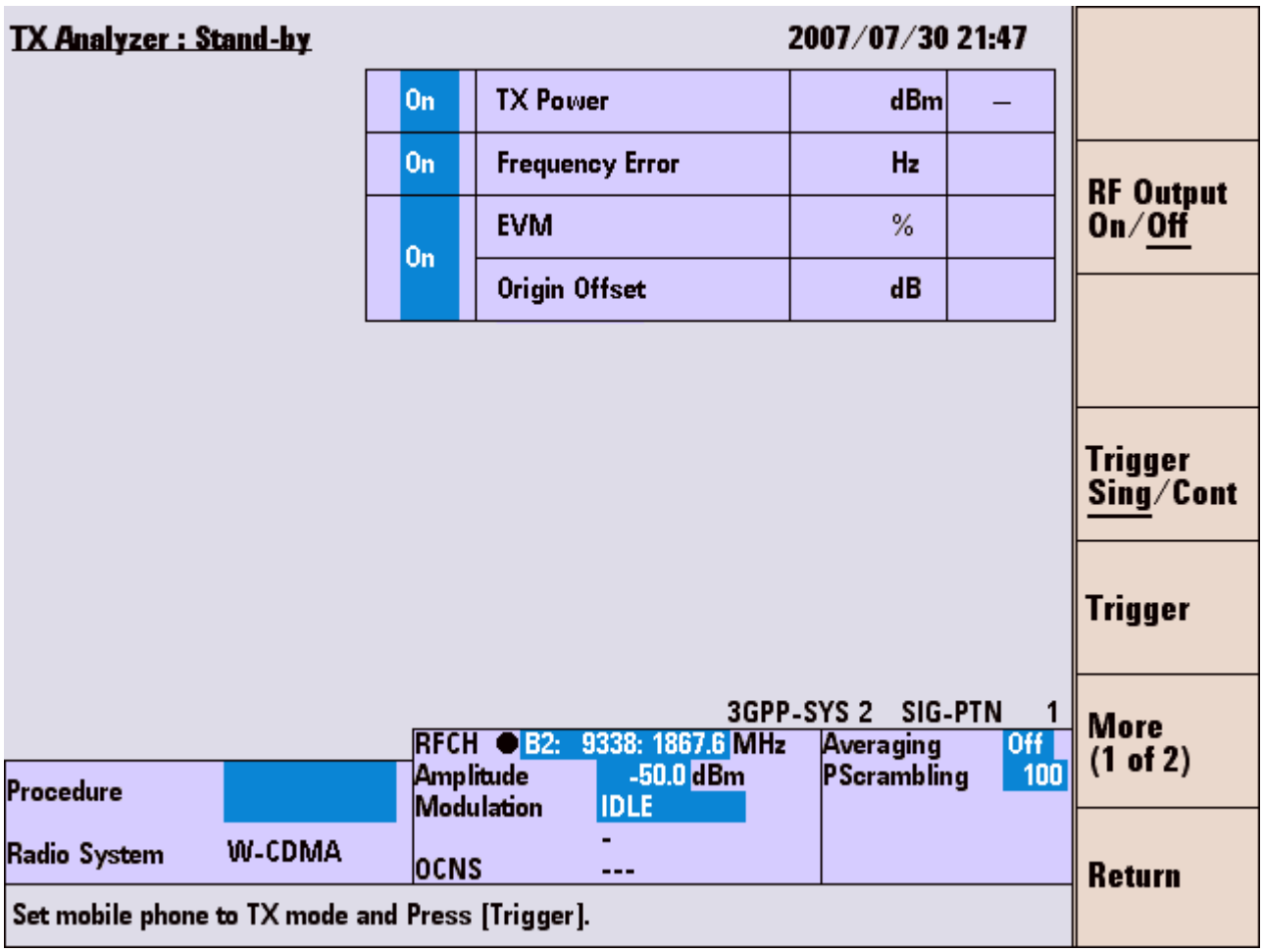


Figure 4-59 [TX Analyzer: Stand-by] Screen

7 Set the input fields.

8 Start a test with the following softkey operations:

- **Trigger Sing/Cont**: When the trigger mode is **Sing**, single measurement starts when the **Trigger** softkey is pressed. To change the trigger mode to continuous mode (**Cont**), press the **Trigger Sing/Cont** softkey.
  When the trigger mode is **Cont**, continuous measurement starts as soon as the [TX Analyzer: Stand-by] screen is displayed.

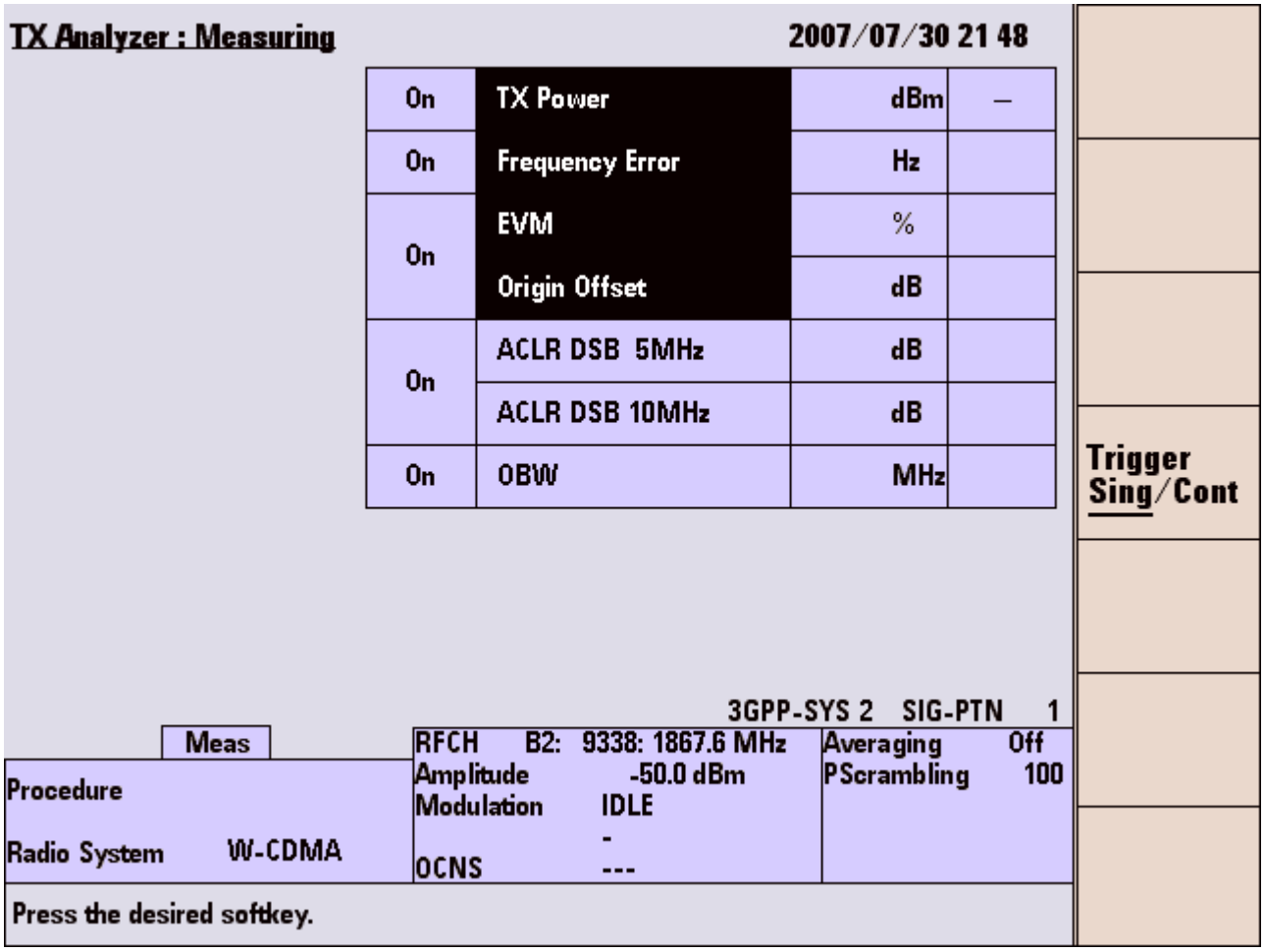


Figure 4-60 [TX Analyzer: Measuring] Screen

9 When the trigger mode is **Cont**, press the **Trigger Sing/Cont** softkey to terminate continuous measurement. The screen showing measurement results is displayed in Figure 4-61.

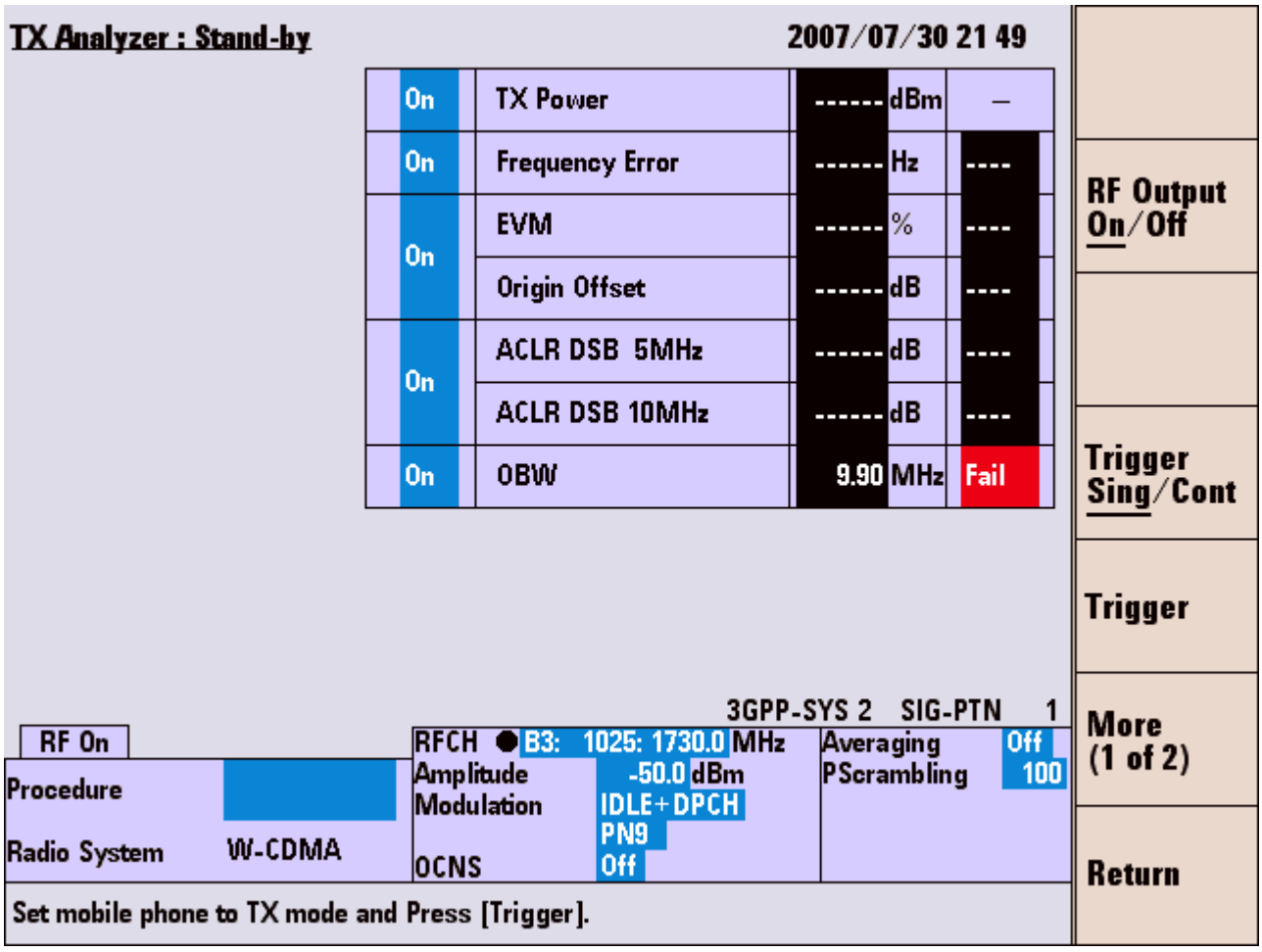


Figure 4-61 [TX Analyzer: Stand-by] Measurement Result Screen

10 The user can save this test procedure in the HDD inside the Tester or a USB memory device. Refer to "Saving Test Setup File" on page 5-171.

Testing a Mobile Phone by Signal Generator

This section describes the testing of mobile phones using the Signal Generator capabilities of the tester.

1. Turn on the Tester and select the W-CDMA system on the [Top Menu] screen. Refer to "System Selection" on page 4-14 about selection of the system.
2. The [Initial] screen as Figure 4-62 is displayed after completion of initialization and self-test routine of the Tester.

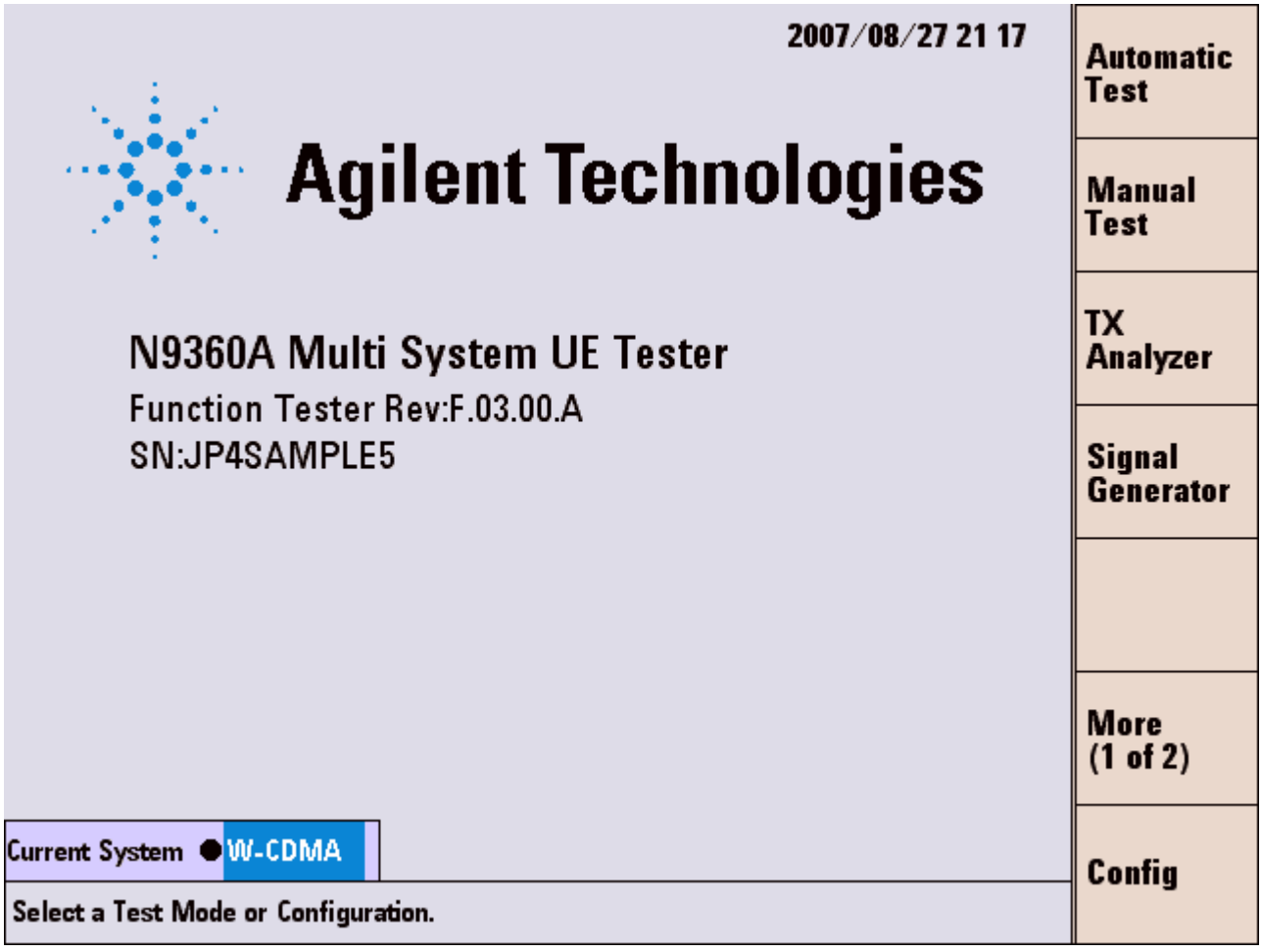


Figure 4-62 [Initial] Screen

3 Set path loss values. Press the **Config**, **Test Condition** and **Loss** softkeys to display the [Configuration: Test Condition (Loss)] screen.

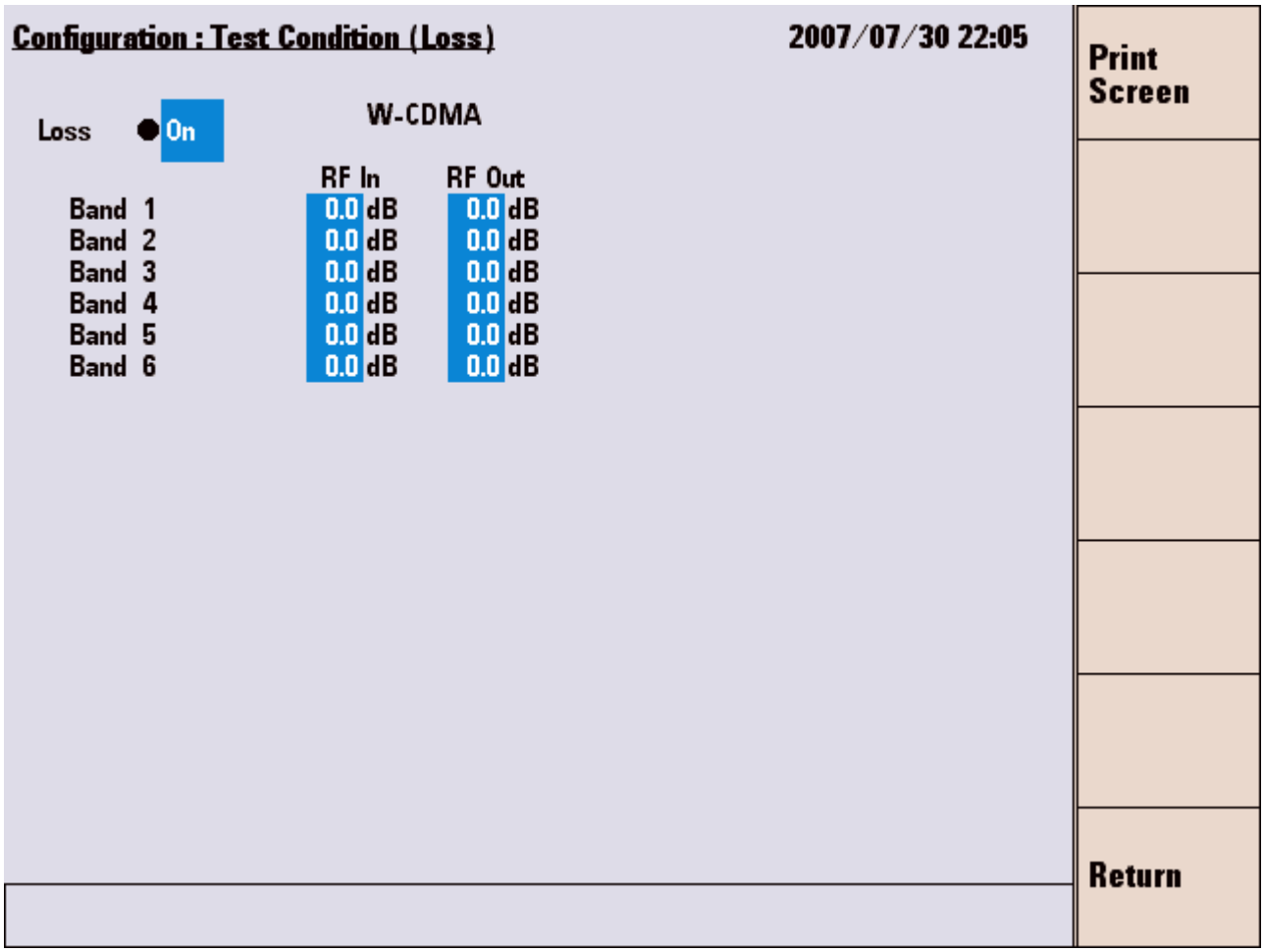


Figure 4-63 [Configuration: Test Condition (Loss)] Screen

4 Set the test condition. Press the **Return** softkey to display the [Configuration: Test Condition] screen. When the Option W07 is installed, the screen as Figure 4-64 is displayed.

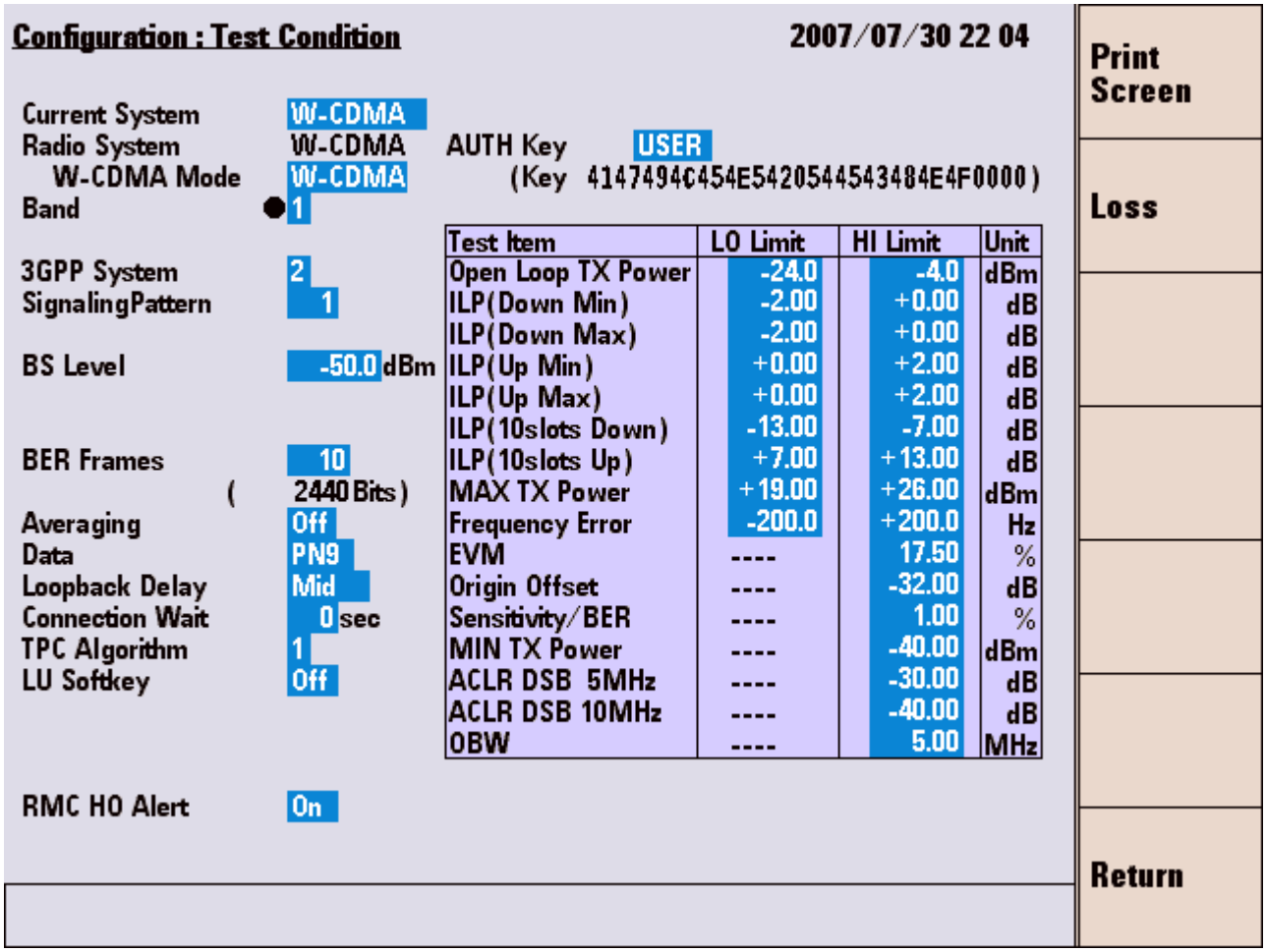

Configuration : Test Condition
2007/07/30 22 04
Current System W-CDMA
Radio System W-CDMA
W-CDMA Mode W-CDMA
Band 1
3GPP System 2
SignalingPattern 1
BS Level -50.0 dBm
BER Frames 10
(2440 Bits)
Averaging Off
Data PN9
Loopback Delay Mid
Connection Wait 0 sec
TPC Algorithm 1
LU Softkey Off
RMC HO Alert On
AUTH Key USER
(Key 4147494C454E5420544543484E4F0000)
Test Item | LO Limit | HI Limit | Unit
Open Loop TX Power | -24.0 | -4.0 | dBm
ILP(Down Min) | -2.00 | +0.00 | dB
ILP(Down Max) | -2.00 | +0.00 | dB
ILP(Up Min) | +0.00 | +2.00 | dB
ILP(Up Max) | +0.00 | +2.00 | dB
ILP(10slots Down) | -13.00 | -7.00 | dB
ILP(10slots Up) | +7.00 | +13.00 | dB
MAX TX Power | +19.00 | +26.00 | dBm
Frequency Error | -200.0 | +200.0 | Hz
EVM | ---- | 17.50 | %
Origin Offset | ---- | -32.00 | dB
Sensitivity/BER | ---- | 1.00 | %
MIN TX Power | ---- | -40.00 | dBm
ACLR DSB 5MHz | ---- | -30.00 | dB
ACLR DSB 10MHz | ---- | -40.00 | dB
OBW | ---- | 5.00 | MHz
Print Screen
Loss
Return

Figure 4-64 [Configuration: Test Condition] Screen

5 Set the Band fields.

6 Start a test by Signal Generator. Press the **Return** softkey twice and then the **Signal Generator** softkey. The [Signal Generator] screen as Table 4-65 is displayed.

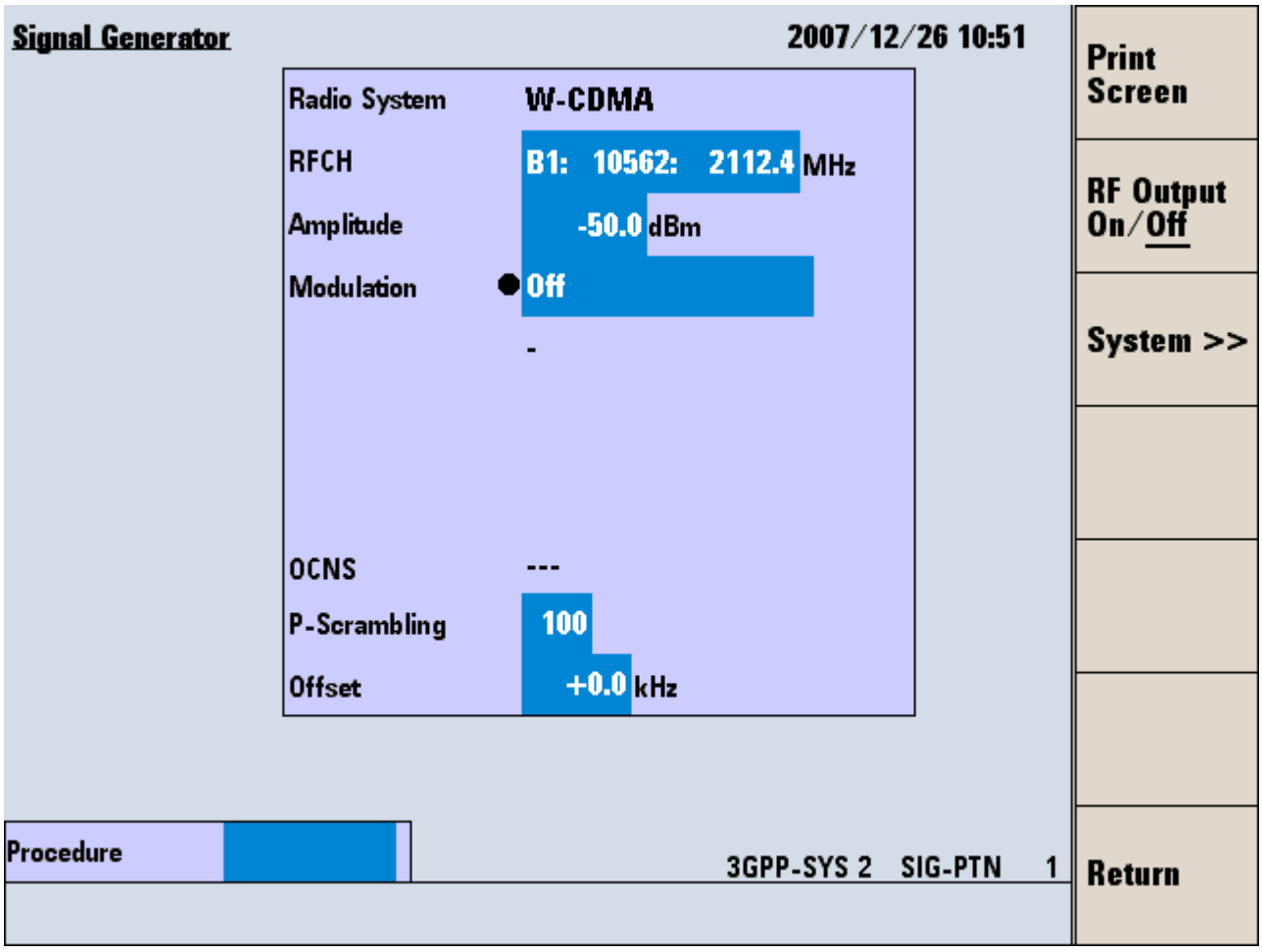


Figure 4-65 [Signal Generator] Screen

7 Set the input fields.

8 Press the **RF Output On/Off** softkey to change "On/Off" state from "Off" to "On" for transmitting RF signal to the mobile phone.

9 Press the **RF Output On/Off** softkey to change "On/Off" state from "On" to "Off" for terminating the test by Signal Generator.

10 The user can save this test procedure in the HDD inside the Tester or a USB memory device. Refer to "Saving Test Setup File" on page 5-171.

Ending A Test

CAUTION Do not turn off the Line switch on the rear panel of the tester while the LINE LED on the front panel of the tester is green. Tester failure may occur otherwise.

Disconnecting the Mobile Phone

Disconnect the mobile phone from the connection cable or the antenna coupler.

Remove the TEST USIM card from the mobile phone.

Turning off the Tester at the End of Test

1. Press and hold the LINE switch on the front panel of the Tester for more than one second.
2. The display blacks out, and the LINE LED on the front panel turns to orange.
3. The power is now turned off except for the reference oscillator in the tester.
4. Turn off the Line switch on the rear panel of the tester to turn off the reference oscillator.
5. All power including the reference oscillator is now turned off and the LINE LED goes off.

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5
Screen Reference

Screen Flow Chart 5-2
Top Menu Screen 5-3
Configuration Screen 5-7
Firmware Update Screen 5-13
Initial Screen 5-24
Return to Menu Screen 5-27
PRESET Select Mode Screen 5-28
Automatic Test 5-30
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Signal Generator 5-140
Configuration 5-145

In this chapter, each screen in the tester display is explained in detail. This includes the operational features and the functional softkeys activated in each screen.

Screen Flow Chart

Figure 5-1 shows the screen flow chart for each function mode. Each rectangle represents one screen with a different function mode and testing status.

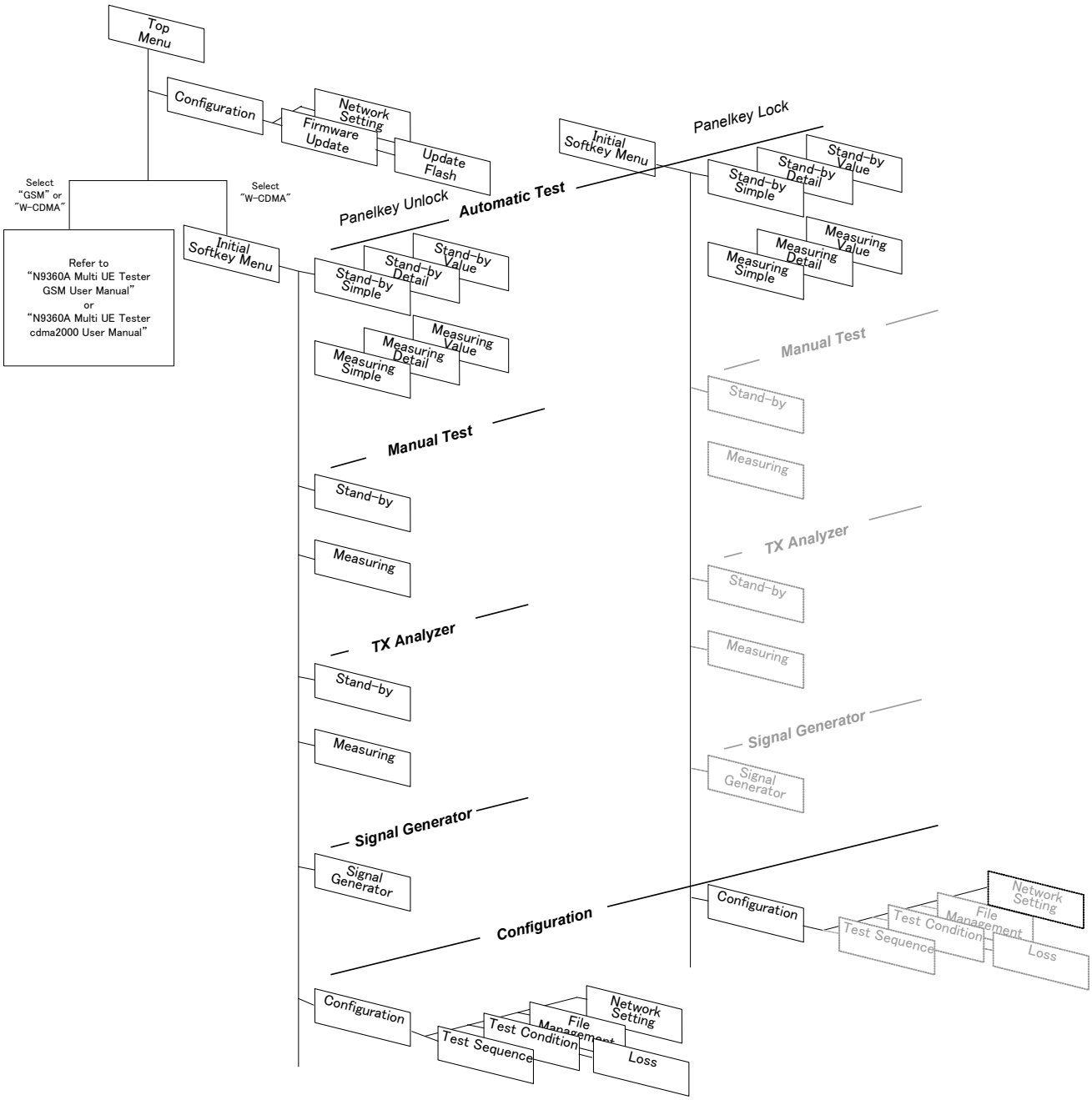


Figure 5-1 Screen Structure Chart

Top Menu Screen

The [Top Menu] screen shown in Figure 5-2 is displayed after the tester completes its power on sequence.

This screen is used to select a system option or the [Configuration] screen.

The system options available are GSM, W-CDMA and cdma2000.

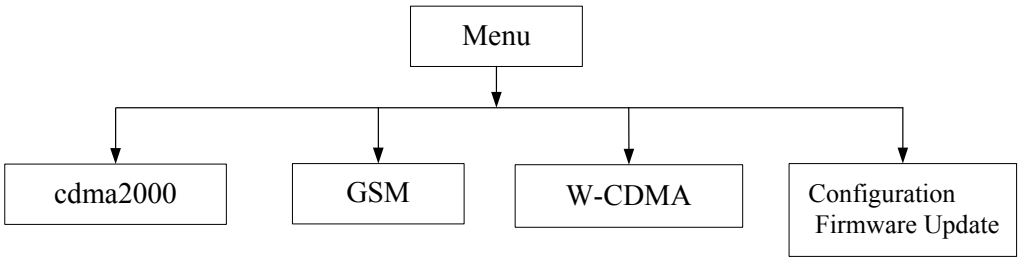


Figure 5-2 Selectable Systems

NOTE

This manual describes only the W-CDMA system. Refer to the *Agilent N9360A Multi UE Tester GSM Option User Manual* and the *Agilent N9360A Multi UE Tester cdma2000 Option User Manual* for information about the test functions of GSM and cdma2000 systems.

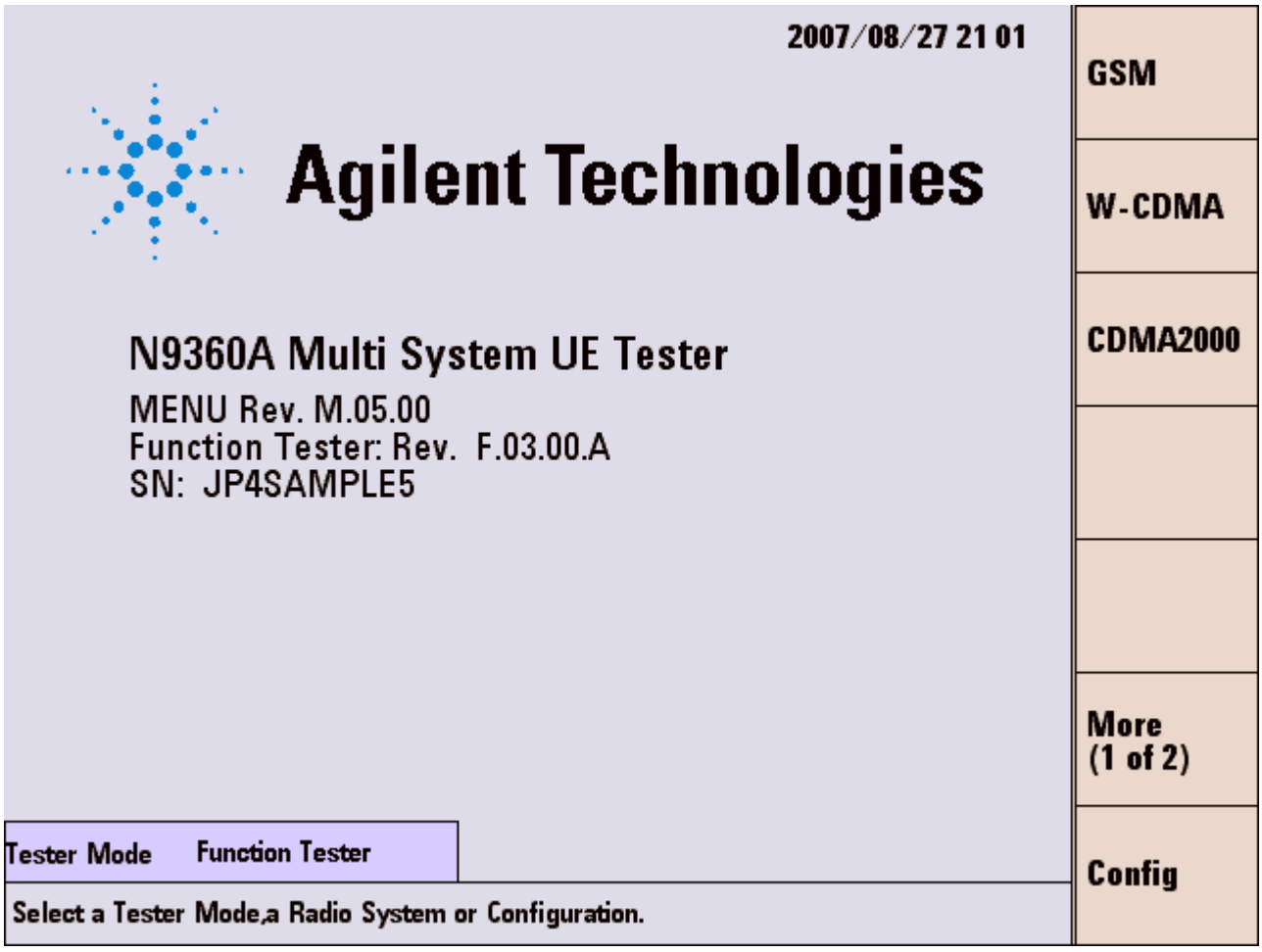


Figure 5-3 [Top Menu] Screen

Softkey Menu Field

Softkey Menu 1

GSM

Selects the GSM system. After the system is selected, the Tester is automatically rebooted, and then displays the [Initial] screen for GSM system. This softkey is activated when the GSM system is installed in the Tester.

W-CDMA

Selects the W-CDMA system. After the system is selected, the Tester is automatically rebooted, and then displays the [Initial] screen for W-CDMA system. This softkey is activated when the W-CDMA system is installed in the Tester.

CDMA2000

Selects the cdma2000 system. After the system is selected, the Tester is automatically rebooted, and then displays the [Initial] screen for cdma2000 system. This softkey is activated when the cdma2000 system is installed in the Tester.

More (1 of 2)

Displays the softkey menu 2.

Config

Displays the [Configuration] screen.

Softkey Menu 2

Print Screen

Prints a hardcopy of the screen or saves a screen image into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

Reboot

Aborts a current system and returns to the [Top Menu] screen after reboots the Tester.

More (2 of 2)

Returns to the softkey menu 1.

NOTE

When the AutoBoot function is set to "FUNC GSM", "FUNC W-CDMA" or "FUNC CDMA2000", the Tester automatically selects the GSM, W-CDMA or cdma2000 system mode if no softkey is pressed within the specified time (10 to 60 seconds). When the Tester is shipped, the AutoBoot function is set to "None". Refer to the "AutoBoot" on page 5-10 for details.

Screen Field

The firmware name, revision number currently installed and serial number are shown in this field.

Message Field

The following message is displayed in the message field:

"**Select a Radio System or Configuration.**"

Configuration Screen

When the **Config** softkey is pressed on the [Top Menu] screen, the [Configuration] screen is displayed. When the Option E00 and the Option E01 are not installed in the Tester, the [Configuration] screens are as Figure 5-4.

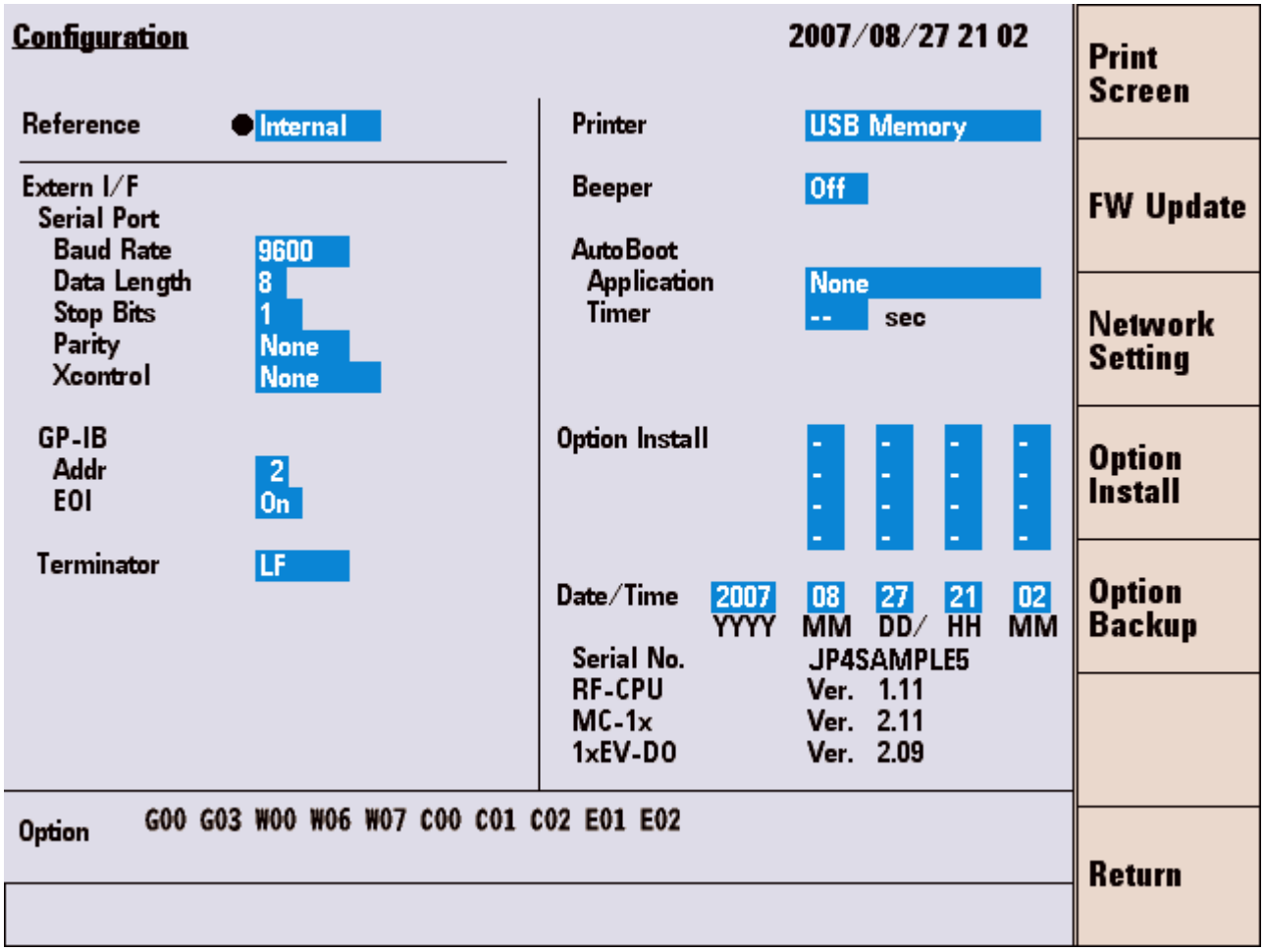


Figure 5-4 [Configuration] Screen (with Option E00/E01)

Softkey Menu Field

Softkey Menu

Print Screen

Prints a hardcopy of the screen or saves a screen image into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

FW Update

Displays the [Firmware Update] screen.

Network Setting

Displays the [Network Setting] screen.

Option Install

Uses for installation of an option function such as G00 and W00.

Option Backup

Backs up the installed option functions.

Return

Returns to the [Top Menu] screen.

If the Option E00 and Option E02 are not installed, setting items for GP-IB are grayed out (disabled) as Figure 5-5.

Figure 5-5 Part of [Configuration] screen (without Option E00 and E02)

When the Option E01 is not installed, setting items for the serial port are grayed out (disabled) as Figure 5-6.

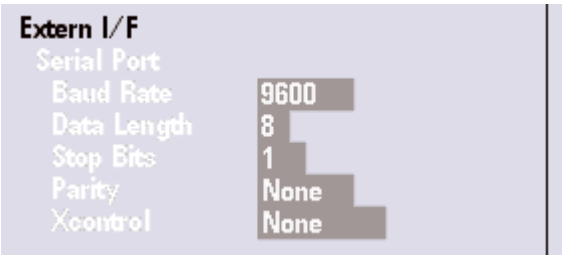


Figure 5-6 Part of [Configuration] screen (without Option E01)

Screen Field

The following input fields need to be set in order to start a new test. The setting required is described in Table 5-1.

Table 5-1 [Configuration] Screen Input Field

Input Field	Description
Reference	Selects a reference signal from "Internal" and "External". • Internal: The internal 10 MHz reference signal is used. • External: The external 10 MHz reference signal is used. The external 10 MHz reference signal must be supplied to the "10 MHz Reference IN" connector on the rear panel.
Serial Port	Sets the communication condition of the serial port (RS-232C) to use remote control. The option E01 is required to use this function. • Baud Rate: Sets communication speed to 9600, 19200, 38400, 57600 or 115200 bits per second. • Data Length: Sets the data length to 7 or 8 bits. • Stop Bits: Sets the stop bit length to 1, 1.5 or 2 bits. • Parity: Sets the parity check mode to "None", "Odd" or "Even". • Xcontrol: Sets the flow control to "None" or "Xon/Xoff".
GPIB †	Sets the communication condition of the GP-IB port to use remote control. The option E00 or option E02 is required to use this function. • Addr: Sets the GP-IB address. The allowable range is from 1 to 15. • EOI: Sets EOI control. Select "On" or "Off". • On: Enables EOI control. (Terminator setting is ignored.) • Off: Disables EOI control. (Terminator setting is valid.) Reboot the Tester after changing the GP-IB setting.
Terminator	• Sets the terminator of the output text data to "CR", "LF" or "CR+LF". This is the setting for remote control using the serial interface, Ethernet and GP-IB. (The terminator of the input data is always "LF". • The Terminator of input text data for GPIB option E00 : set to CR+LF for GPIB option E02 : set to LF.

Table 5-1 [Configuration] Screen Input Field

Input Field	Description
Printer	Sets the destination to which the print data is sent to "USB Memory" or "EPSON PM-G800", when the **Print Screen** softkey is pressed. • USB Memory: Saves the image of the screen into a USB memory device. The file format is PNG (Portable Network Graphics). • EPSON PM-G800: Prints a hardcopy of the screen with the specified printer
Beeper	Sets beep. Selects "On" or "Off". • On: Beeps for each step of operation. • Off: Beeps only for noticing some errors and warnings.
AutoBoot	Specifies the system for automatic boot when a certain time (time-out period) has passed since the [Top Menu] screen was displayed. • Application: Selects a system from the followings: • None: No automatic boot occurs. • FUNC GSM: Boots the GSM option. • FUNC W-CDMA: Boots the W-CDMA option. • FUNC CDMA2000: Boots the cdma2000 option. • Timer: Sets the time out timer (10 to 60 seconds) or "----". The timer is stopped when any softkey is pressed. • ----: Disables the setting for the time out timer. • 10 to 60: Sets the time-out timer.
Date/Time †	Sets the current date and time in the following format. • YYYY: Sets the year. The allowable range is from 1990 to 2037. • MM: Sets the month. The allowable range is from 01 to 12. • DD: Sets the day. The allowable range is from 01 to 31. • HH: Sets the hour. The allowable range is from 00 to 23. • MM: Sets the minute. The allowable range is from 00 to 59.
Option Install	Installs Option. Set the 16 digits option key and press the **Option Install** softkey to install an option. When using this function, do not insert a USB memory device.

† The changing magnification softkey is available. Refer to "Changing Magnification Softkey" on page 4-13.

In addition, this screen displays the following information:

- Serial number
- Revision number of RF CPU software.
- Revision number of MC-1x CPU software. (Only when the C00 and C01 options are installed.)
- Revision number of 1xEV-DO CPU software. (Only when the C00, C01 and C02 option are installed.)

- Options that are already installed.

Option Installation/Backup

On the [Configuration] screen, you can install/back up option functions. such as C01, C02, W00, and G00.

NOTE To install options, a suitable option key for the option is required. For further information, contact the Agilent Sales Department or a licensed distributor.

Option Install

Install option functions to the Tester. There are two way to install it. One is using a USB memory device. The other is not using a USB memory device.

Using a USB memory Device

Prepare a USB memory device which contains an option key.

1 Press the Config softkey on the [Top Menu] screen to display the [Configuration] screen.

2 Insert a USB memory device which contains the option key to the USB connector on the front panel of the Tester.

3 Press the Option Install softkey.

4 The option number is added in the "Option" field in the information field. Remove the USB memory device from the Tester.

Unusing a USB memory Device

Prepare the 16 digits option key.

1 Press the Config softkey on the [Top Menu] screen to display the [Configuration] screen.

2 Sets the 16 digits option key to the Option Install field with the CURSOR CONTROL knob.

3 Press the Option Install softkey.

4 The option number is added in the "Option" field in the information field.

Option Backup

Before Back up option information, prepare a USB memory device.

1 Press the Config softkey on the [Top Menu] screen to display the [Configuration] screen.

2 Insert a USB memory device into the USB connector on the front panel of the Tester.

3 Press the Option Backup softkey.

4 Confirm **"Option Backup complete!"** message on the Message field of the screen, and remove the USB memory device from the Tester.

Firmware Update Screen

Insert a USB memory device which contains the firmware to the USB connector on the front panel of the Tester.

Press the **Config** softkey on the [Top Menu] screen, and press the **FW Update** softkey. The [Firmware Update] Screen as Figure 5-7 is displayed.

On this screen, the following information is displayed:

- Revision:

  Displays the current revision and the revision of the firmware in the USB memory device.

- "?.??.??":

  Indicates that there is no file in the USB memory device for firmware update.

- "-.--.--" or "*.**.**":

  Indicates that the firmware is not installed in the Tester.

- "(complete)":

  Indicates that the firmware, which is contained in the USB memory device, is updated completely. It is displayed in the USB version display area.

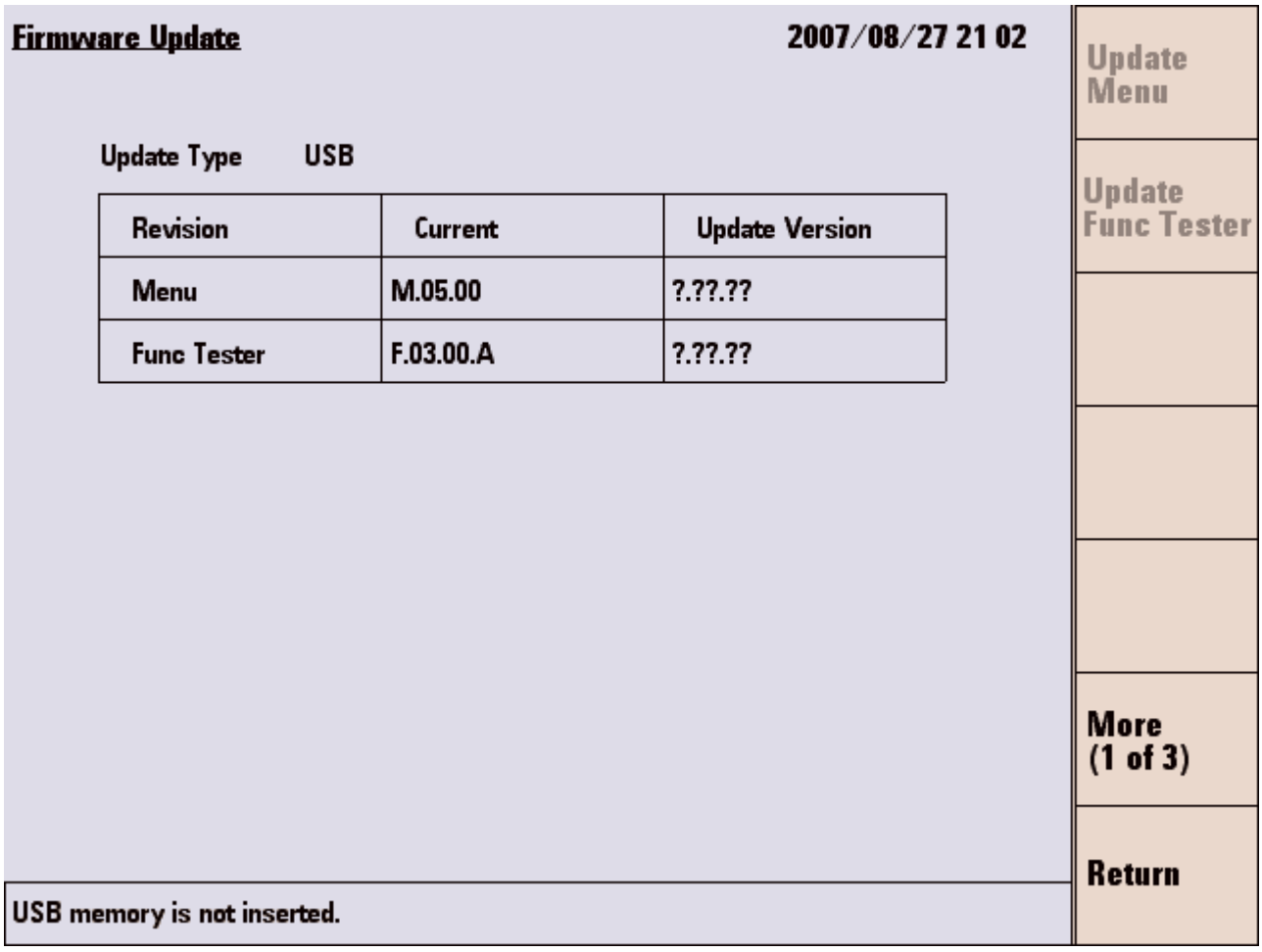


Figure 5-7 [Firmware Update] Screen

Softkey Menu Field

Softkey Menu 1

Update Menu: Updates the Top Menu functions.

Press this softkey to update the Top Menu functions after inserting the USB memory device contained the firmware. Restart the Tester after updating the Top Menu functions.

Update Func Tester: Updates the Function Tester functions.

Press this softkey to update the Function Tester functions after inserting the USB memory device contained the firmware.

More (1 of 3) : Displays the Softkey Menu 2.

Return: Return to the [Configuration] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or stores the screen image in a USB memory device, according to the "Printer" field on the [Configuration] screen.

Update SYSTEM: Updates the system functions. Press this softkey to update the system function after inserting the USB memory device contained the system functions. After updating the system functions, restarting the Tester may be required, depending on the type of the update.

Update Flash: Displays the [Update Flash] Screen.

More (2 of 3): Displays to the Softkey Menu 3.

Softkey Menu 3

Clear HDD File: This softkey is unavailable.

Reload List: This softkey is unavailable.

Update Type: This softkey is unavailable.

More (3 of 3): Returns to the Softkey Menu 1.

Message Field

Depending on the situation, the following message is displayed in the message field:

- Press [Update xxxx] to update.

  This massage is displayed when there is a firmware in the USB memory device.
- USB memory is not inserted.
- No update files exists in the inserted USB memory device.
- Processing... [Don't remove a USB memory!]
- Completed!
- FW-Update failed [Error number]

NOTE Before pressing the **FW Update** softkey, make sure that the appropriate USB memory device is inserted into the USB connector.

Update Flash Screen

Insert a USB memory device that contains the firmware to the USB connector on the front panel of the Tester.

Press the **Config** softkey on the [Top menu] screen, and press the **FW Update**, **More (1 of 3)** and **Update Flash** softkeys. The [Update Flash] Screen as Figure 5-8 is displayed.

On this screen, the following information is displayed.

- Revision:

  Displays the current revision and the revision of the firmware in the USB memory device.

- "?.??.??":

  Indicates that there is no file in the USB memory device for firmware update.

- "-.--.--" or"*.**.**:

  Indicates that the firmware is not installed in the Tester.

- "(complete)":

  Indicates that the firmware, which is contained in the USB memory device, is updated completely. It is displayed in the USB version display area.

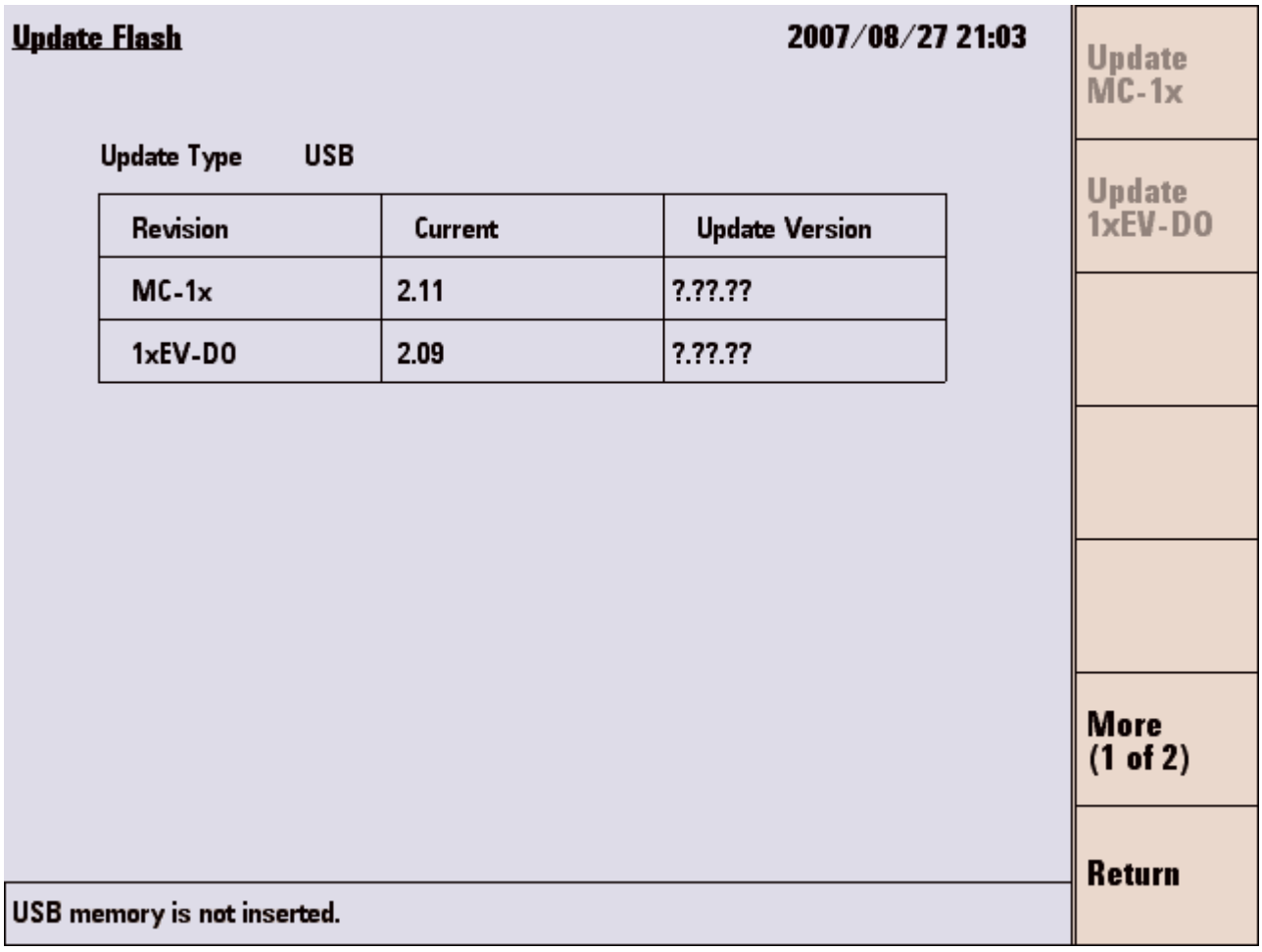


Figure 5-8 [Update Flash] Screen

Softkey Menu Field

Softkey Menu 1

Update MC-1x : Updates the MC-1x functions.

Pressing this softkey after inserting the USB memory device with the firmware for the MC-1x functions executes the update.

Update 1xEV-DO: Updates the 1xEV-DO functions.

Pressing this softkey after inserting the USB memory device with the firmware for the 1xEV-DO functions executes the update.

More (1 of 2): Displays the Softkey Menu 2.

Return: Return to the [Firmware Updater] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or stores the screen image in a USB memory device, according to the "Printer" field on the [Configuration] screen.

More (2 of 2): Returns to the Softkey Menu 1.

Message Field

Depending on the situation, the following message is displayed in the message field:

- Press [Update xxxx] to update.

  This massage is displayed when there is a firmware in the USB memory device.
- USB memory is not inserted.
- No update files exists in the inserted USB memory device.
- Processing... [Don't remove a USB memory!]
- Completed!
- FW-Update failed [Error number]

NOTE

Before pressing the **Update Flash** softkey, make sure that the appropriate USB memory device is inserted into the USB connector.

Network Setting Screen

On the [Network Setting] screen, you can configure network settings.

When the **Network Setting** softkey on the [Configuration] screen is pressed, the [Network Setting] Screen as Figure 5-9 is displayed.

This screen allows you to configure the following settings:

- IP Address
- CIDR (Subnet Mask)
- Gateway

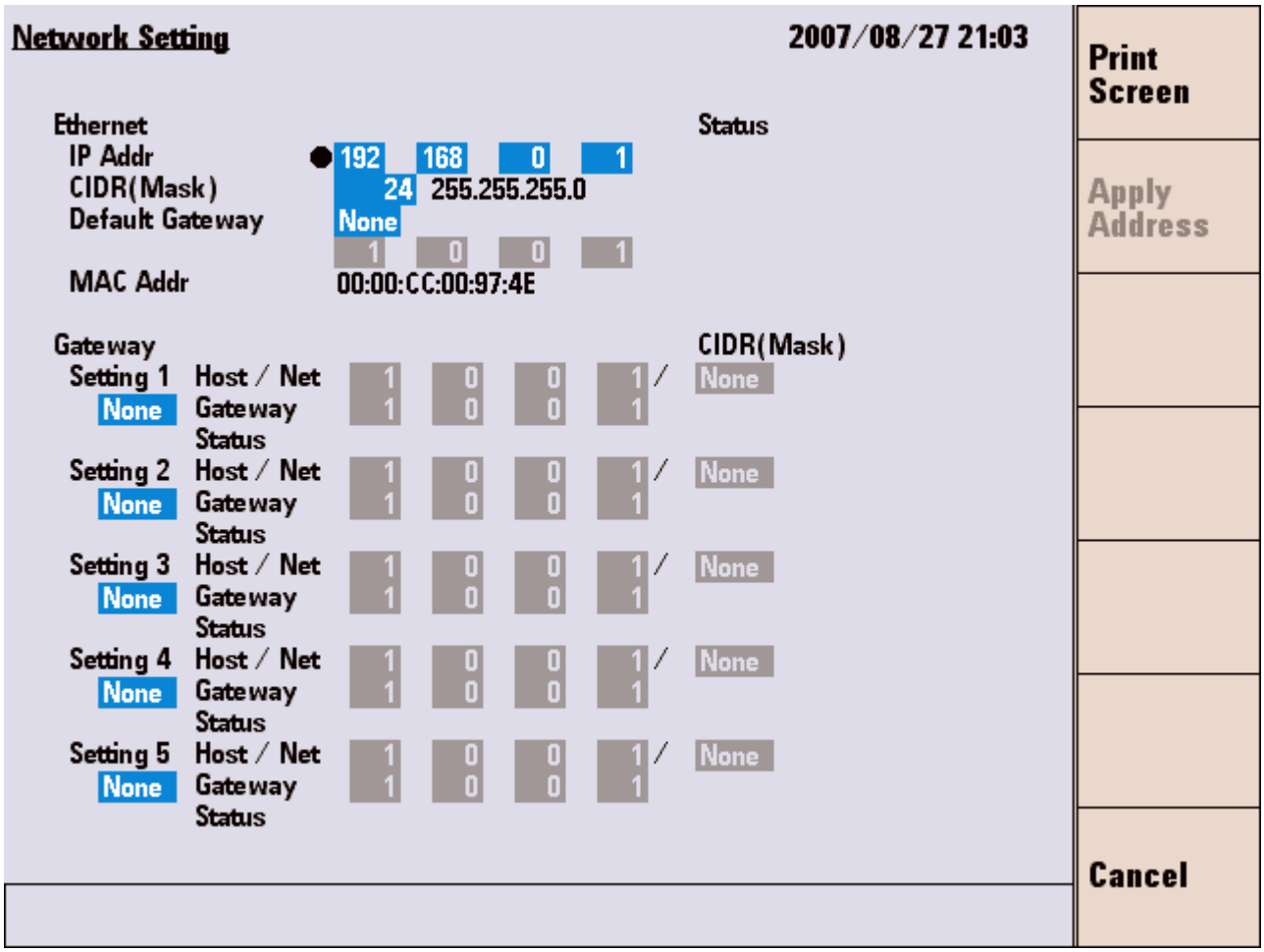


Figure 5-9 [Network Setting] Screen

Softkey Menu

Print Screen: Prints a hardcopy of the screen or stores the screen image in a USB memory device, according to the "Printer" field on the [Configuration] screen.

Apply Address: Applies the changes of "IP Addr", "Mask", "Default Gateway", "Host/Net", "Gateway" and "CIDR" to the Tester. This softkey is not activated when the [Network Setting] screen is displayed and no setting is changed. This softkey is activated when any input field is changed. After applying the settings, this softkey is inactivated again.

Cancel: Returns to the [Configuration] screen. Values changed before pressing the **Apply Address** softkey are reverted to the former values.

Screen Field

The following input fields need to be set for a new test according to the following description of Table 5-2.

Table 5-2 [Network Setting] Screen Input Field

Input Field	Description
IP Addr	Sets the IP address of the Tester. Allowable setting value is as follows: 1.0.0.1 to 223.255.255.255 (From 192.168.1.1 to 192.168.1.255 are unavailable to setting.) • The IP address setting supports Class A through Class C. • The Tester does not support Class D (multicast address) and Class E (reserved address). • The default IP address is "192.168.0.1". • If the IP address setting fails, "Invalid" is displayed in the Status field. • Changes to the IP address is effective after pressing the **Apply Address** softkey.
CIDR	(Mask)Sets the subnet mask in CIDR format. Allowable setting value is as follows: 1 to 31 • The default mask value is 24 (255.255.255.0). • If the mask value setting fails, "Invalid" is displayed in the Status field. • Changes to the mask setting is effective after pressing the **Apply Address** softkey. Refer to "Appendix A Input Fields and Allowable Choices or Ranges" on page A-1 for details.

Table 5-2 [Network Setting] Screen Input Field

Input Field	Description
Default Gateway	Sets active or inactive of the Default Gateway setting, and sets the Default Gateway address. The allowable settings are as follows: • None: Default Gateway setting is inactivated. • ACT: Default Gateway setting is activated. When "None" is selected, the address setting field is grayed out and inactivated. 1.0.0.1 to 223.255.255.255 (From 192.168.1.1 to 192.168. 1.255 are unavailable to setting.) • The IP address setting supports Class A through Class C. • The Tester does not support Class D (multicast address) and Class E (reserved address). • The Default Gateway setting is valid when you set the allowable Default Gateway address, and the Tester and the Default Gateway belong to the same network. • When the Tester and Default Gateway do not belong to the same network, "Unreachable" is displayed in the Status field because the routing from the Tester cannot be resolved. • If the Default Gateway is set to "None" when booting, the address is displayed as (0.0.0.0), which means invalid. • When the Default Gateway setting fails, "Invalid" is displayed in the Status field. • The Default Gateway setting is effective after pressing the **Apply Address** softkey.
Setting 1 to 5	Sets "Act/None" (active/inactive) of gateway settings from 1 to 5. The allowable setting is as follows: • None: The Gateway setting is inactivated. • ACT: The Gateway setting is activated. • The Gateway setting is effective after pressing the **Apply Address** softkey. When "None" is selected, the address setting field is grayed out and unavailable.
Host/Net	Sets the destination host or network addresses for gateway setting from 1 to 5. Allowable settings are as follows: • When Host address is specified (When the CIDR is set to None.): • 1.0.0.1 to 223.255.255.255 (From 192.168.1.1 to 192.168.1.255 are unavailable to setting.) • When Network address is specified (When the CIDR is not set to None): • 1.0.0.0 to 223.255.255.255 (From 192.168.1.0 to 192.168.1.255 are unavailable to setting.) • The IP address setting supports Class A through Class C. • The Tester does not support Class D (multicast address) and Class E (reserved address). • When the Gateway setting fails, "Invalid" is displayed in the Status field. • The Host/Net setting is effective after pressing the **Apply Address** softkey. • If the CIDR is set to "None", the Host/Net setting is recognized as a host address. • If the CIDR is set to value other than "None", the Host/Net setting is recognized as the network address. In this case, the address of Host part is set to "0". If it specifies the value other than "0", "Invalid" is displayed in the Status field. • The address setting is automatically changed to 1.0.0.1 when the address was set to 1.0.0.0 and the Host/Net setting is changed from network to host.

Table 5-2 [Network Setting] Screen Input Field

Input Field	Description
Gateway	Sets the Gateway addresses for gateway setting from 1 to 5. Allowable settings are as follows: 1.0.0.1 to 223.255.255.255 (From 192.168.1.1 to 192.168.1.255 are unavailable to setting.) • The IP address setting supports Class A through Class C. • The Tester does not support Class D (multicast address) and Class E (reserved address). • The gateway setting is valid when you set the allowable address, and the Tester and the Gateway belong to the same network. • If the Gateway is set to None when booting, the address is displayed as (0.0.0.0), which means invalid. • When the Tester and Gateway do not belong to the same network, "Unreachable" is displayed in the Status field. • The Gateway setting is effective after the pressing the **Apply Address** softkey.
CIDR	Sets the subnet masks for the destination address in CIDR format from Setting 1 to 5. Allowable setting values are as follows: • None or 1 to 31 • When the CIDR is set to "None", the "Host/Net" setting is recognized as a host address. • When the CIDR is set to value other than "None", the "Host/Net" setting is recognized as network address. • If the "Gateway" setting is disabled when booting, "None" is displayed in the CIDR field. • Changes to the mask setting is effective after pressing the **Apply Address** softkey. Refer to "Appendix A Input Fields and Allowable Choices or Ranges" on page A-1 for details.

† For numeric value entry, the changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13

In addition, this screen displays the following information:

- MAC address
- Status: Shows how each address is configured.
  - If any abnormality is detected in the IP Addr/Mask setting, "Invalid" is displayed.
  - If any abnormality is detected in the Default Gateway setting, "Invalid" is displayed.
  - If the Tester and the Default Gateway does not belong to the same network, "Unreachable" is displayed.
  - If any abnormality is detected in the Gateway setting, "Invalid" is displayed.
  - If the Tester and the gateway do not belong to the same network, "Unreachable" is displayed.

Initial Screen

After selecting a system, the [Initial] screen shown in Figure 5-10 is displayed. This screen is used to select one of the function modes or to return to the [Top Menu] screen.

To return to the [Initial] screen from any function mode, press the **Return** softkey (multiple times if necessary).

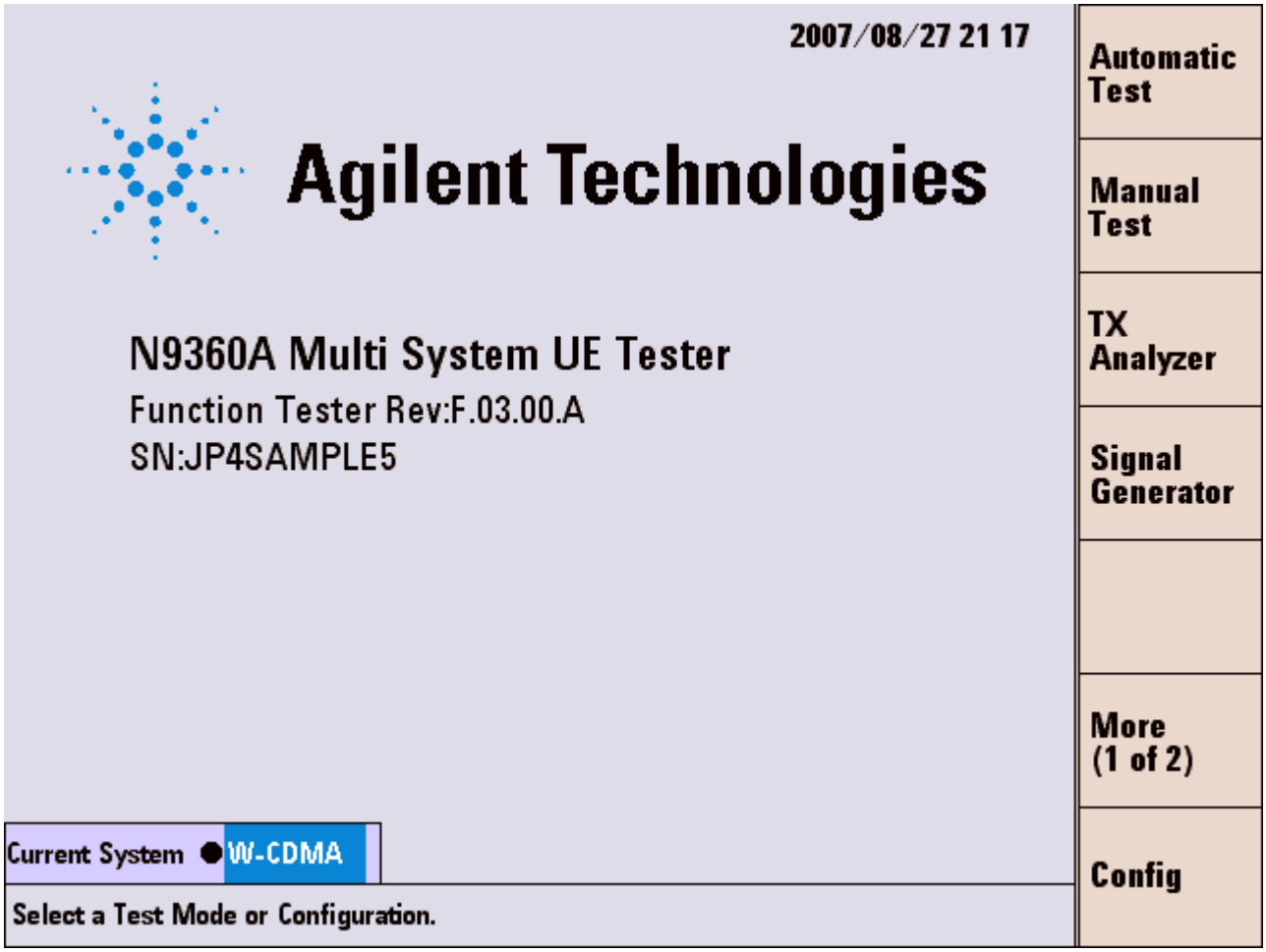


Figure 5-10 [Initial] Screen

Softkey Menu Field

Softkey Menu 1

Automatic Test: Displays the [Automatic Test: Stand-by] screen. Refer to “Automatic Test" on page 5-30

Manual Test: Displays the [Manual Test: Stand-by] screen. Refer to “Manual Test" on page 5-59

TX Analyzer: Displays the [TX Analyzer: Stand-by] screen. Refer to “TX Analyzer" on page 5-126

Signal Generator: Displays [Signal Generator] screen. Refer to “Signal Generator" on page 5-140

More (1 of 2): Displays the softkey menu 2.

Config: Displays the [Configuration] screen. Refer to “Configuration" on page 5-145

Softkey Menu 2

Print Screen: Prints the hard-copy of the screen or stores the screen image in the USB memory device, according to the "Printer" setting on the [Configuration] screen.

Return to Menu: Displays the [Return to Menu]screen for returning the [Top Menu] screen. Refer to “Return to Menu Screen" on page 5-27

More (2 of 2): Returns to the softkey menu 1.

Screen Field

The firmware name and revision number currently installed are displayed on this screen:

Set the input fields in the screen field according to the following description of Table 5-3 to execute a new test.

Table 5-3 [Initial] Screen Input Field

Input Field	Description
Procedure	Displays a list of parameter file names stored in the Tester for selection if the Tester contains parameter files. Select a file to recall parameters for a test. If the Tester is using a parameter file, the file name is shown in this field
Current System	Displays a system being run. Select the test mode from "GSM", "W-CDMA" or "CDMA2000". W-CDMA is valid when the W00 option is installed. CDMA2000 is valid when the C00 option, C01 option and C02 option (1xEV-DO) is installed.

Message Field

The following message is displayed in the message field:

"Select a Test Mode or Configuration."

Return to Menu Screen

When the **Return to Menu** softkey is pressed on the Initial screen, the following screen is displayed (Figure 5-11).

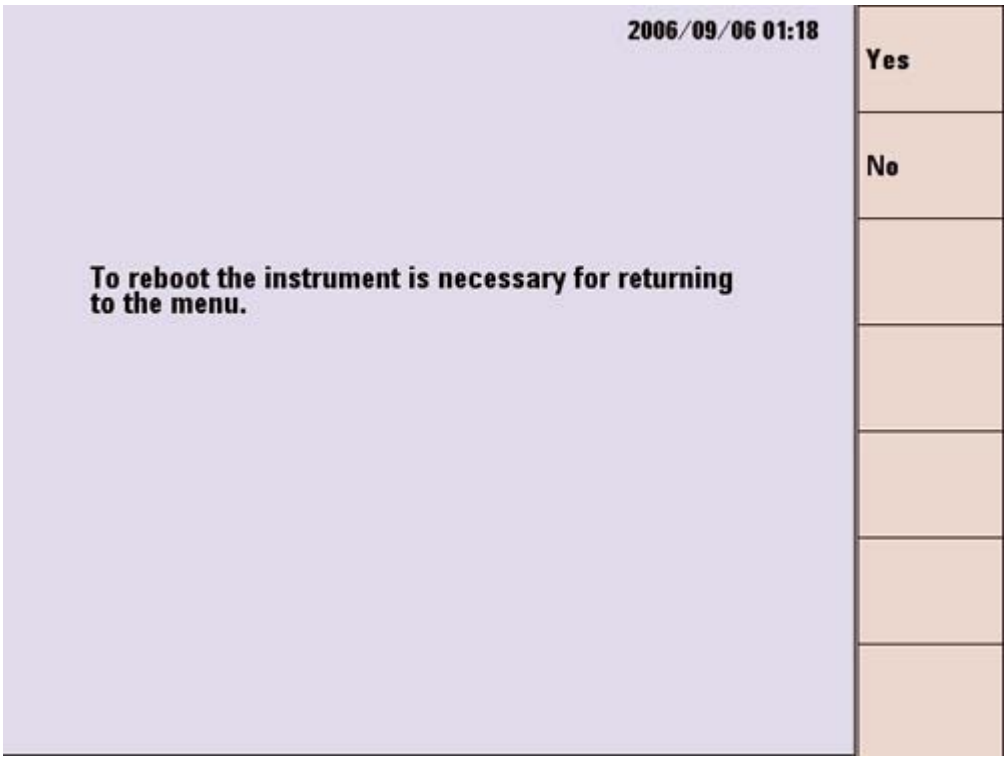


Figure 5-11 [Return to Menu] Screen

Softkey Menu Field

Softkey Menu

OK: Returns to the [Top Menu] screen.

Cancel: Cancels returning to the [Top Menu] screen, and then returns to the [Initial] screen instead.

Screen Field

The following message is displayed in the screen field:

"To reboot the instrument is necessary for returning to the menu."

PRESET Select Mode Screen

When the PRESET key on the front panel of the tester is pressed in the Menu, the screen in Figure 5-12 is displayed.

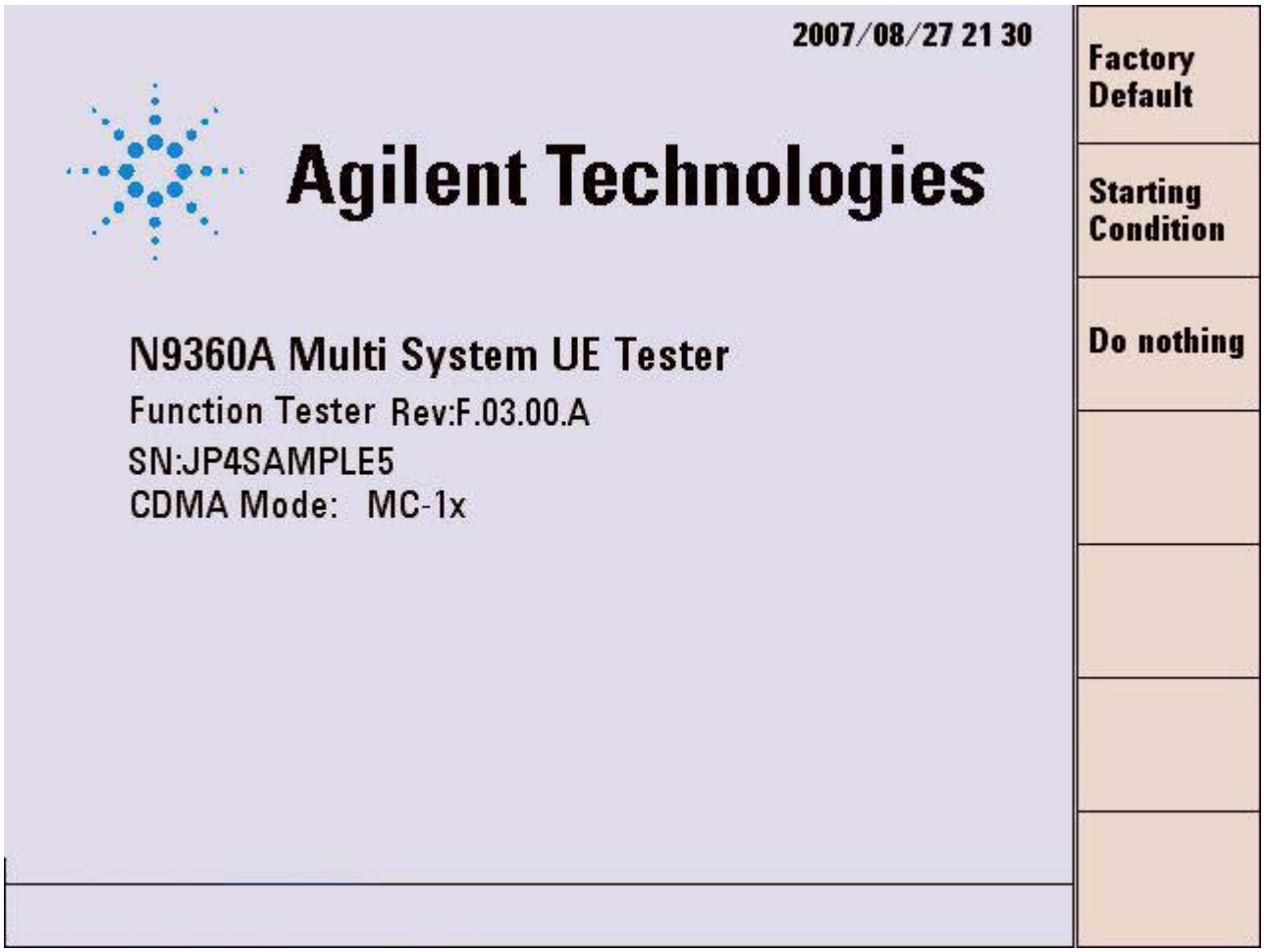


Figure 5-12 [PRESET Mode] Screen

Or, the PRESET key is pressed after selection of the W-CDMA system, the screen as Figure 5-13 is displayed.

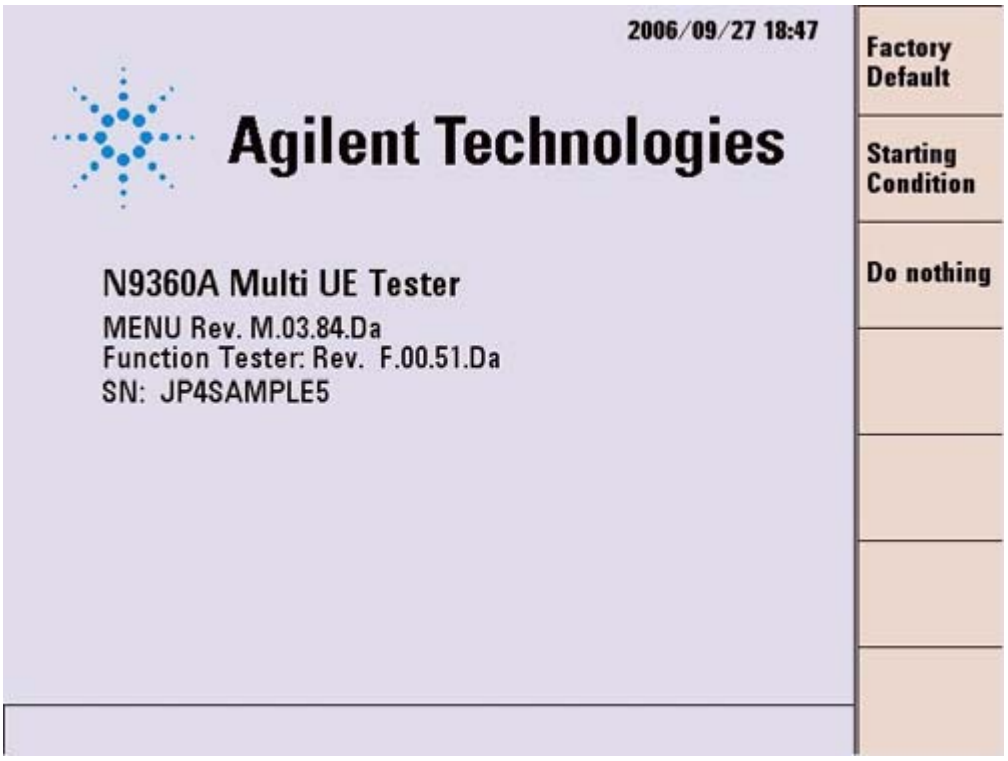


Figure 5-13 [PRESET Mode] Screen (in W-CDMA System)

Softkey Menu Field

Softkey Menu

Factory Default: All the parameters of the Tester other than parameters related to external control revert to the factory default. After selecting this softkey, the [Top Menu] screen or the [Initial] screen of the W-CDMA is displayed. This influences the parameters of GSM, W-CDMA and cdma2000.

Starting Condition: Values in the input fields revert to those values when the Tester was booted. The softkey memory (channel, frequency and level) and the values for the Caller ID and the Authentication Key that were set through remote control commands do not revert. After selecting this softkey, the [Top Menu] screen or the [Initial] screen of the W-CDMA is displayed. This influences the parameters of GSM, W-CDMA and cdma2000.

Do nothing: Initialization of the parameters is not performed. After selecting this softkey, the [Top Menu] screen or the [Initial] screen of the W-CDMA is displayed.

Automatic Test

Overview

Feature of Automatic Test

- Pass/Fail test results in the test flow and measurement items are automatically obtained.
- This function executes RF test switching frequencies on up to six channels automatically. Combining Sequence 1 and Sequence2 enables measurement on up to 12 channels in one test.
- System handover from Sequence1 to Sequence2 can be executed when the G00 Option is installed.

NOTE

Each of W-CDMA and GSM can be set for Sequence 1 and Sequence 2. To execute system handover from Sequence 1 to Sequence 2, set the Sequence 1 to W-CDMA and the Sequence 2 to GSM.

This manual explains test items only for W-CDMA. Refer to the N9360A Multi UE Tester GSM User Manual and the N9360A Multi UE Tester cdma2000 User Manual for GSM and cdma2000 test items.

Automatic Test Setting in Configuration Mode

- Parameters:
  The parameters used in Automatic Test are set in the Configuration: Test Sequence and the Configuration: Test Condition screen.
- Loss:
  The path loss values for each band can be entered on the Configuration screen to correct the RF attenuation between the mobile phone and the Tester. Refer to “Actual Input/Output Level and Correction" on page 4-19 for correction of input/output signal.
- ATT In/Out:
  The path loss values for each RFCH can be set on the Configuration: Test Sequence screen to correct the RF test results at each RFCH in a band.
- Sequence:
  Up to two test sequences can be set in the Configuration: Test Sequence screen.

RF Test in Automatic Test

Table 5-4 describes the measurement items of RF test in the Automatic Test. The limits for measurement items can be set on the Configuration: Test Condition screen.

Refer to "Configuration: Test Condition Screen" on page 5-156.

Table 5-4 Automatic Test Measurement Items

Measurement Item	Description
Open Loop TX Power	Measures the power of PRACH. Refer to "Open Loop Power" on page E-2 for detail.
ILP (Down Min)	Measures the minimum variation of the MS output power level during 10 times of 1 dB down continuously. Refer to "Inner Loop Power" on page E-9 for detail.
ILP (Down Max)	Measures the maximum variation of the MS output power level during 10 times of 1 dB down continuously. Refer to "Inner Loop Power" on page E-9 for detail.
ILP (Up Min)	Measures the minimum variation of the MS output power level during 10 times of 1 dB up continuously. Refer to "Inner Loop Power" on page E-9 for detail.
ILP (Up Max)	Measures the maximum variation of the MS output power level during 10 times of 1 dB up continuously. Refer to "Inner Loop Power" on page E-9 for detail.
ILP (10 slots Down)	Measures the output power level difference between before 10 dB down and after 10 dB down. Refer to "Inner Loop Power" on page E-9 for detail.
ILP (10 slots Up)	Measures the output power level difference between before 10 dB up and after 10 dB up. Refer to "Inner Loop Power" on page E-9 for detail.
MAX TX Power	Measures the maximum TX power. Refer to "Maximum Output Power" on page E-4 for detail.
Frequency Error	Measures the frequency error. Refer to "Frequency Error" on page E-7 for detail.
EVM	Measures the EVM (Error Vector Magnitude). Refer to "Error Vector Magnitude" on page E-5 for detail.
Sensitivity/BER	Measures the BER (Bit Error Rate) in a weak electric field. Refer to "Reference Sensitivity" on page E-13 for detail.
MIN TX Power	Measure the minimum TX power. Refer to "Minimum TX Power" on page E-17 for detail.

NOTE

The default state at power on is the last setting stored in the internal memory of the Tester before power off.

For numeric value entry, the changing magnification softkey menu is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

TEST USIM

Insert the TEST USIM provided by Agilent in the mobile phone before performing any test because the Tester is not able to perform any test with a USIM which is provided by cell phone operator or other TEST USIMs.

Stand-by Screen

When the Automatic Test softkey is pressed on the [Initial] screen, the [Automatic Test: Stand-by] simplified screen is displayed. During the test, the user can then select the appropriate screen using the softkeys listed in Table 5-5.

Table 5-5 [Automatic Test: Stand-by] Screen Selections

Softkey	Screen Displayed	See
Simple	[Auto Test: Stand-by] Simple screen	Figure 5-14
Detail	[Auto Test: Stand-by] Detail screen	Figure 5-15
Value	[Auto Test: Stand-by] Value screen	Figure 5-16

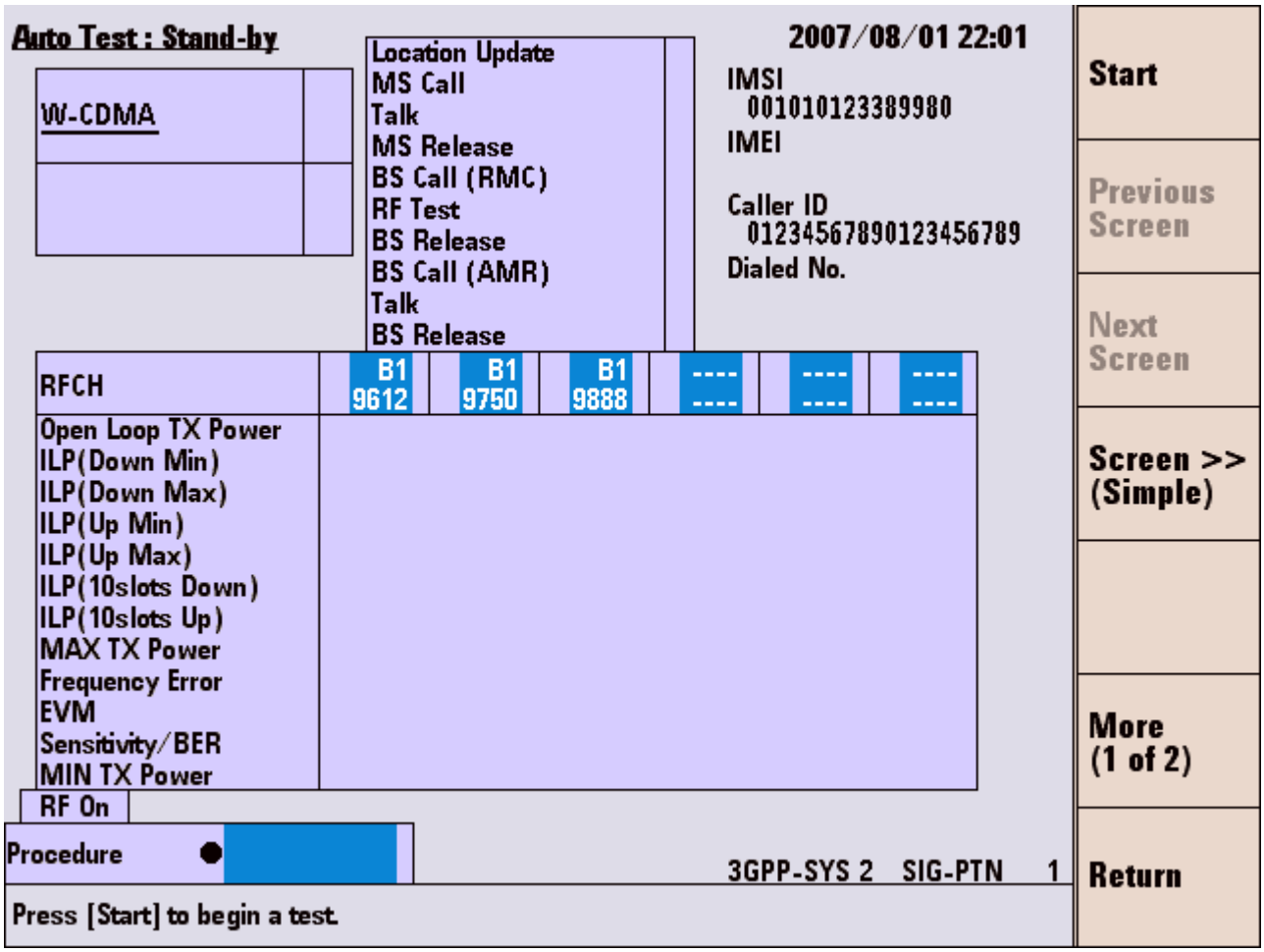


Figure 5-14 [Automatic Test : Stand-by] Simplified Screen

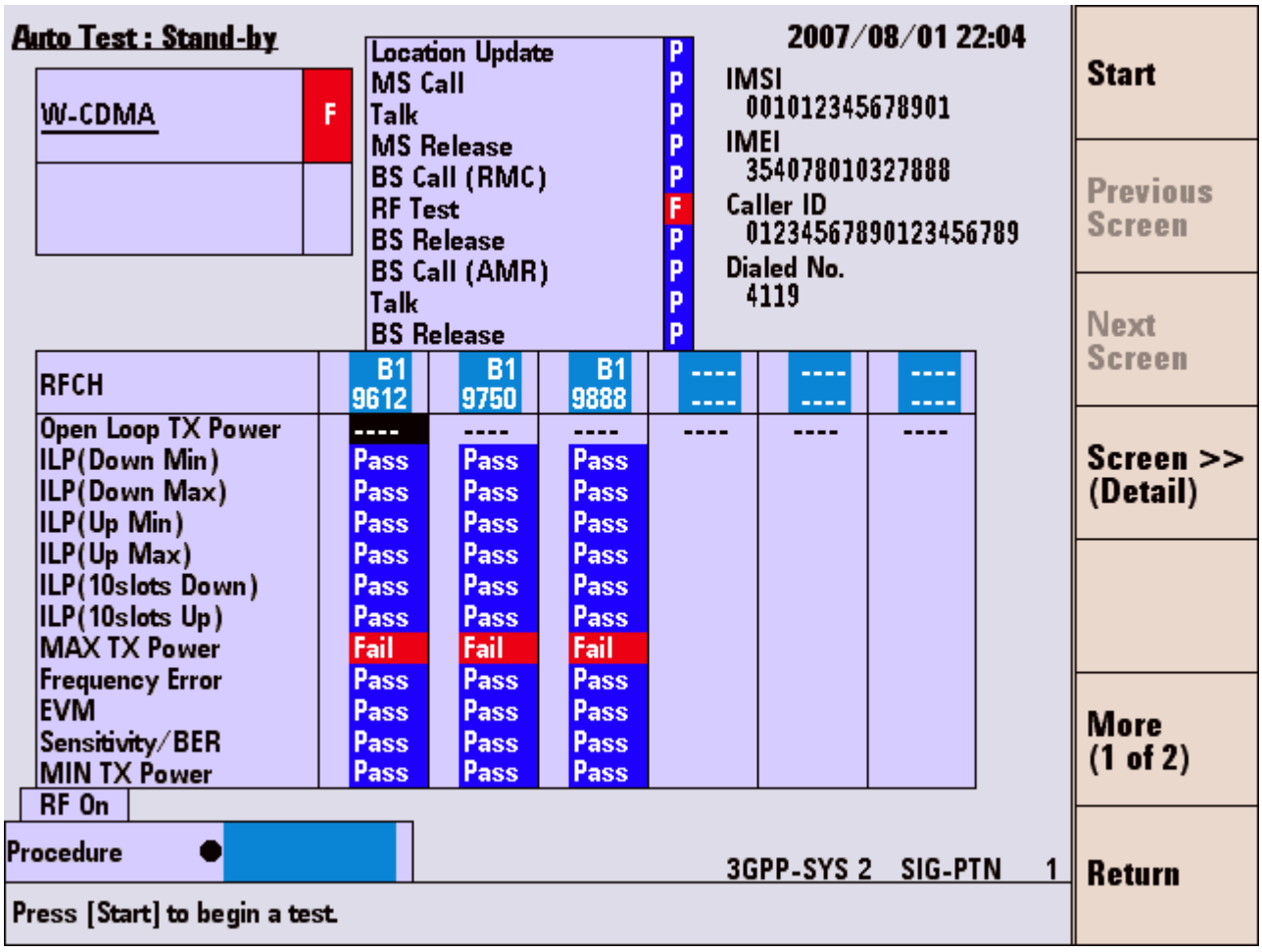


Figure 5-15 [Automatic Test : Stand-by] Detailed Screen

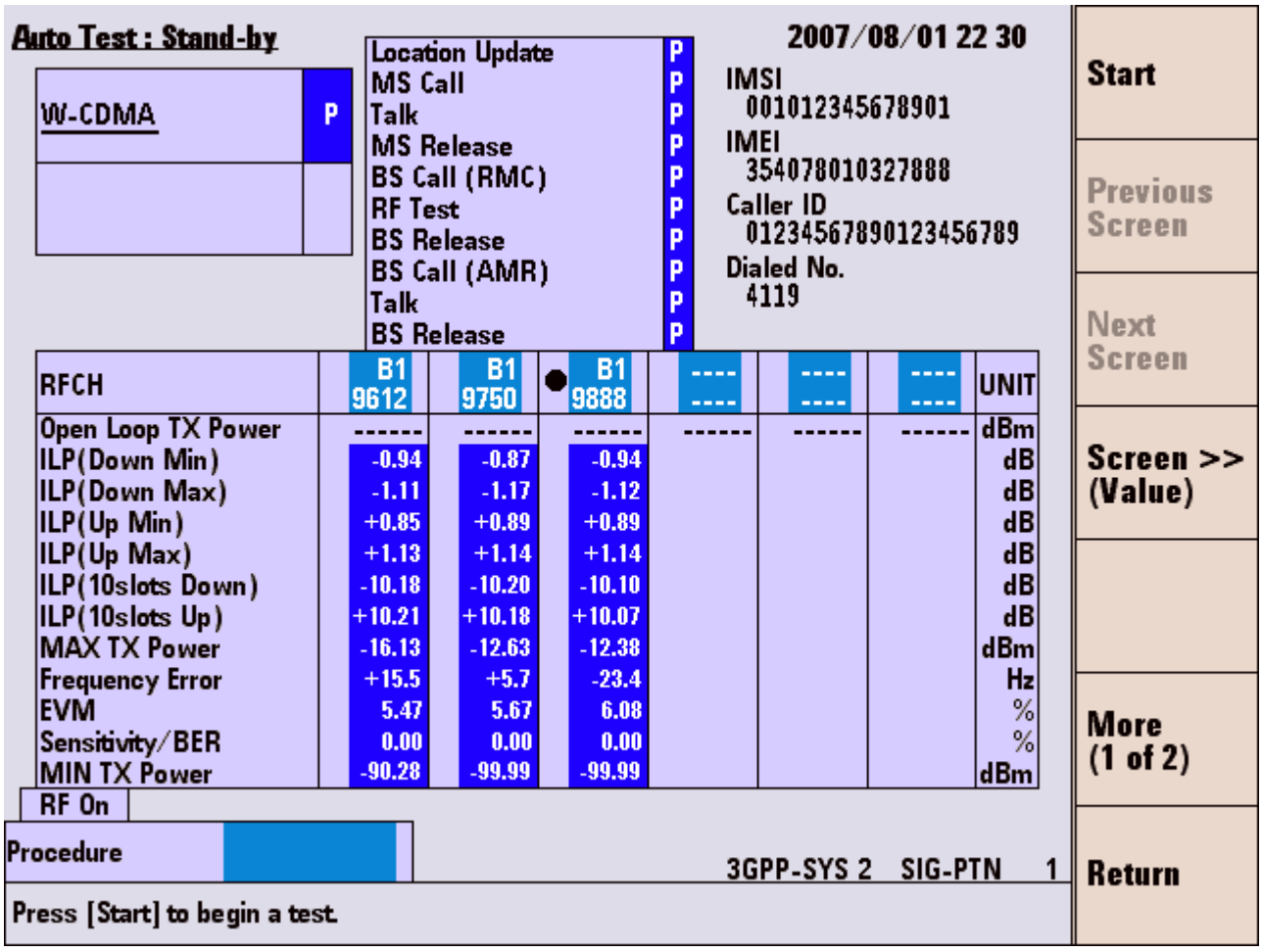


Figure 5-16 [Automatic Test: Stand-by] Value Screen

Softkey Menu Field

Softkey Menu 1

Start: Starts testing the mobile phone by Automatic Test.

Previous Screen: Changes the screen to the previous sequence one. This softkey is inactivated when the screen of Sequence 1 is displayed.

Next Screen: Changes the screen to the next sequence one. This softkey is inactivated when Sequence 2 is set to "Off" or the screen of Sequence 2 is displayed.

Screen>>: Displays the softkey menu 3 containing the softkeys to select a display mode.

More (1 of 2): Displays the softkey menu 2.

Return: Returns to the [Initial] screen.

Softkey Menu 2 **Print Screen**: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

More (2 of 2): Returns to the softkey menu 1.

Softkey Menu 3

Simple: Displays a Pass/Fail result of whole measurement in the middle of the measurement result field in zoom.

Detail: Displays a Pass/Fail result at each item cell in the measurement result field.

Value: Displays a measurement value at each item cell in the measurement result field.

Cancel: Cancels selecting the display mode and returns to the softkey menu 1.

Screen Field

Set the input fields in the screen field according to the following description in Table 5-6 to execute a new test.

Table 5-6 [Automated Test: Stand-by] Screen Input Fields

Input Field	Description
Procedure	Displays a list of parameter file names stored in the tester for selection if the tester contains parameter files. Select a file to recall parameters for a test. If the tester is using a parameter file, the file name is shown in this field

Table 5-6 [Automated Test: Stand-by] Screen Input Fields

Input Field	Description
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1: 9600 to 9900 (1920.0MHz to 1980.0MHz) • Band 6: 812 (832.5MHz), 837 (837.5MHz) and 4150 to 4200 (830.0MHz to 840.0MHz) • Band 1:9600 to 9900 (1920.0MHz to 1980.0MHz) • Band 2: 9250 to 9550 (1850.0MHz to 1910.0MHz) 12 (1852.5MHz), 37 (1857.5MHz), 62 (1862.5MHz), 87 (1867.5MHz), 112 (1872.5MHz), 137 (1877.5MHz), 162 (1882.5MHz), 187 (1887.5MHz), 212 (1892.5MHz), 237 (1897.5MHz), 262 (1902.5MHz), 287 (1907.5MHz) • Band3: 8550 to 8925 (1710.0MHz to 1785.0MHz) • Band4: 8550 to 8775 (1710.0MHz to 1755.0MHz) 1162 (1712.5MHz), 1187 (1717.5MHz), 1212 (1722.5MHz), 1237 (1727.5MHz), 1262 (1732.5MHz), 1287 (1737.5MHz), 1312 (1742.5MHz), 1337 (1747.5MHz), 1362 (1752.5MHz) • Band5: 4120 to 4245 (824.0MHz to 849.0MHz) 782 (826.5MHz), 787 (827.5MHz), 807 (831.5MHz), 812 (832.5MHz), 837 (837.5MHz), 862 (842.5MHz) • Band6: 4150 to 4200 (830.0MHz to 840.0MHz) 812 (832.5MHz), 837 (837.5MHz) • "---": Skip

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

The followings are also displayed in the screen field:

- **3GPP-SYS and SIG-PTN**
  "3GPP System" and "Signaling Pattern" currently set on the Configuration: Test Sequence and Configuration: Test Condition screens respectively are displayed on the lower-right corner of the screen.
- **RF On indicator**
  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the Tester is output to the RF In/Out connector.
- **Radio system**
  A Radio System (W-CDMA) for each of the sequence 1 and 2 is shown at the upper left of the screen. The sequence that is currently displayed is underlined.
- If some measurement items are set to be skipped on the Configuration: Test Sequence screen, "----" is shown at those item cells in the measurement result field on the detailed and the value screen.
  Also, if some test items in the signaling step are set to be skipped on the Configuration: Test Sequence screen, "-" is shown at the corresponding steps in the test result field.

The information from the mobile phone and the tester, listed in Table 5-7, is displayed at the upper right corner in the screen field.

Table 5-7 [Auto Test: Stand-by] Screen With Mobile Phone Information

Item Information	Description
IMSI	Displays the default value of International Mobile Subscriber Identity. The preset value 001010123389980 is displayed at this state.
IMEI	This field remains blank at this state.
Caller ID	Displays addresser number sent from the tester at BS Call execution. The set value is displayed at this state.
Dialed No.	This field remains blank at this state.

Message Field

The following message is displayed in the message field on the Stand-by screens:

"**Press [Start] to begin a test.**"

The word [Start] in the message field denotes a softkey.

Measuring Screen

When the **Start** softkey is pressed on the [Auto Test: Stand-by] screen, the [Auto Test: Measuring] screen is displayed, and a test starts.

The status of sequences is shown in the upper left corner of the screen. The sequence under the test execution is underlined.

A signaling step under execution, any step from "Location Update" to "BS Release", is highlighted. For example, the "Talk" step is highlighted while the "Talk" step is being executed.

The test results of sequences and signaling steps are shown as follows:

- "P": Shown on blue background denotes the test passed.
- "F": Shown on red background denotes the test failed.

During the test, the user can then select the appropriate screen using the softkeys listed in Table 5-8.

Table 5-8 [Auto Test: Measuring] Screen Selections

Softkey	Screen Displayed	See
Simple	[Auto Test: Measuring] Simple screen	Figure 5-17
Detail	[Auto Test: Measuring] Detail screen	Figure 5-18
Value	[Auto Test: Measuring] Value screen	Figure 5-19

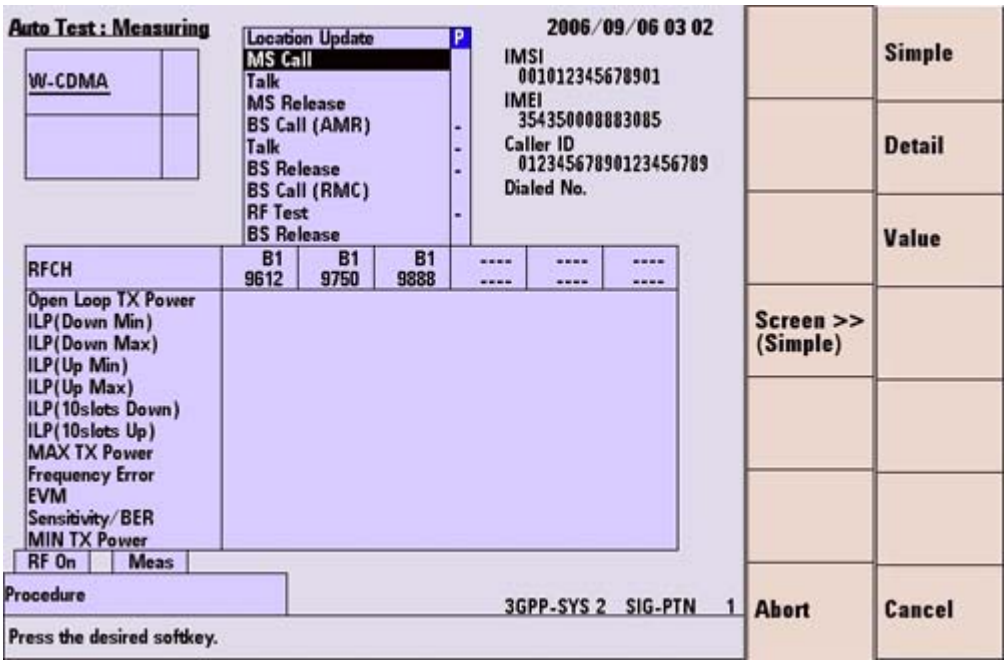


Figure 5-17 [Automatic Test: Measuring] Simplified Screen

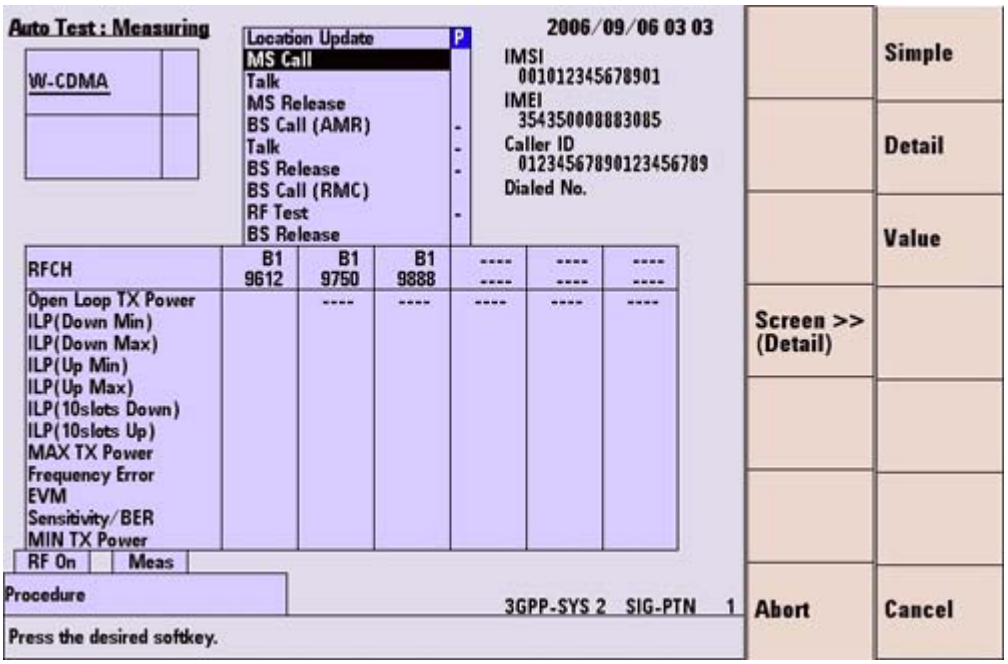


Figure 5-18 [Automatic Test: Measuring] Detailed Screen

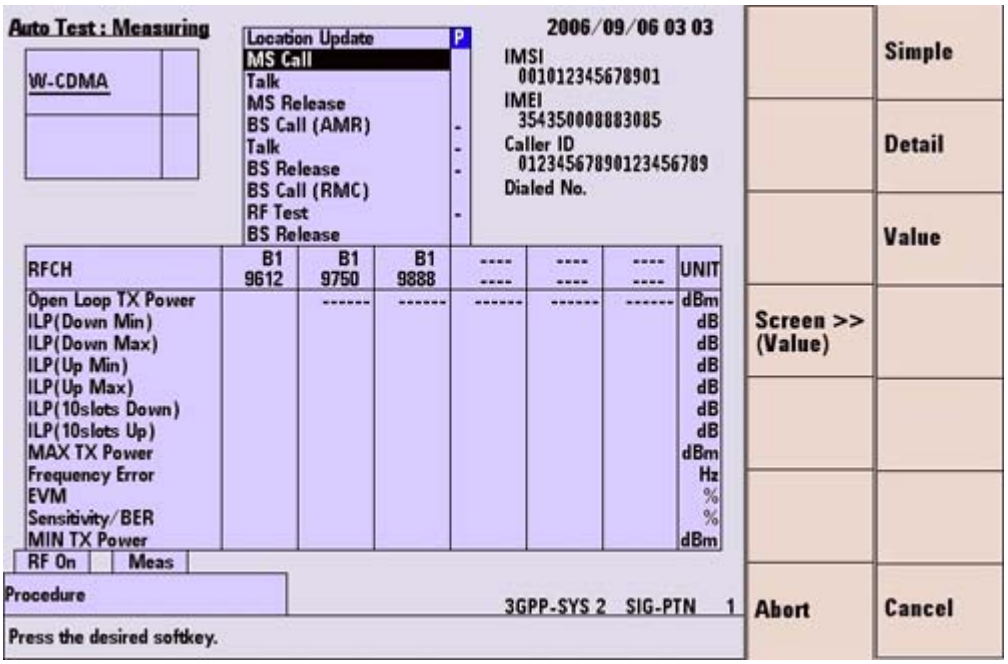


Figure 5-19 [Automatic Test: Measuring] Value Screen

Softkey Menu Field

Softkey Menu 1

Screen>>: Displays the softkey menu 2 containing the softkeys to select a display mode.

Abort: Aborts the test and returns to the [Stand-by] screen.

Softkey Menu 2

Simple: Displays a Pass/Fail result of whole measurement in the middle of the measurement result field in zoom.

Detail: Displays a Pass/Fail result at each item cell in the measurement result field.

Value: Displays a measurement value at each item cell in the measurement result field.

Cancel: Cancels selecting a display mode and returns to the softkey menu 1.

Screen Field

The information from the mobile phone and the Tester as Table 5-9 is displayed at the upper right corner in the screen field.

Table 5-9 Mobile Phone Information in [Auto Test: Measuring] Screen

Item Information	Description
IMSI	Displays the International Mobile Subscriber Identity received from the mobile phone.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
Caller ID	Displays addresser number sent from the tester at BS Call execution. The set value is displayed at this state.
Dialed No.	Displays the number dialed from the mobile phone at MS Call execution.

The followings are also displayed in the screen field.

3GPP-SYS and SIG-PTN
The 3GPP system and the signaling pattern that are currently set on the Configuration: Test Condition screen are displayed at the lower-right corner of the screen.

RF On indicator
"RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the Tester is output to the RF In/Out connector.

Message Field

The following message is displayed on the Measuring screens in execution of Location Update, MS call, BS call, MS Release or BS Release.

"Press the desired softkey."

Measuring Talk Screen

During Talk step execution, the [Auto Test: Measuring] Talk Screen screen is displayed. At this step, the tester is checking the quality of the loop back voice and determine whether it passes or fails.

During the test, the user can then select the appropriate screen using the softkeys listed in Table 5-10.

Table 5-10 [Auto Test: Measuring] Talk Screen Selections

Softkey	Screen Displayed	See
Simple	[Auto Test: Measuring] Talk Simple screen	Figure 5-20
Detail	[Auto Test: Measuring] Talk Detail screen	Figure 5-21
Value	[Auto Test: Measuring] Talk Value screen	Figure 5-22

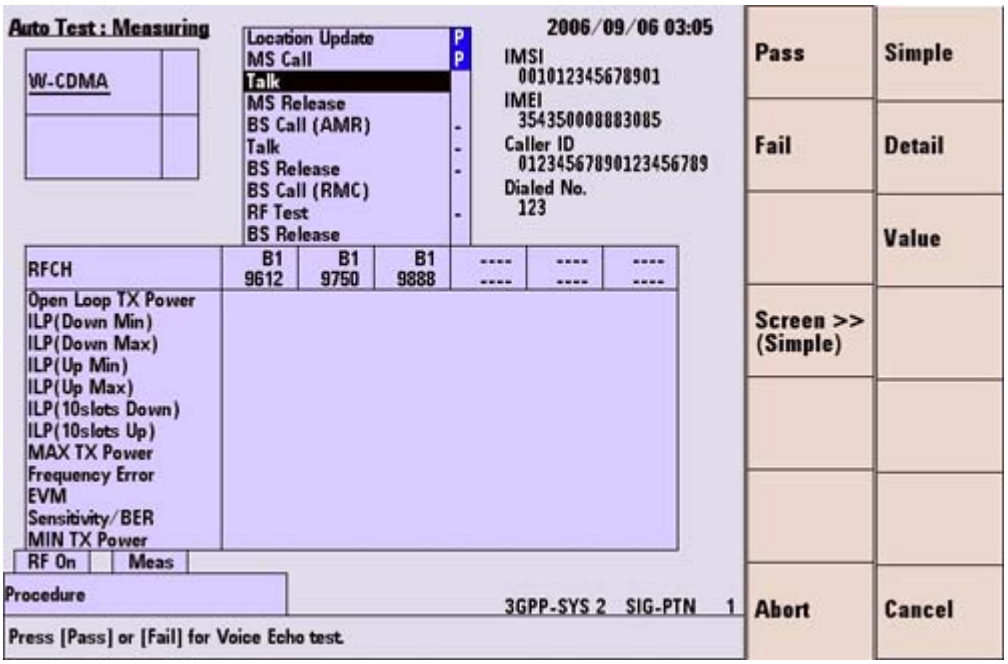


Figure 5-20 [Automatic Test: Measuring] Talk Simplified Screen

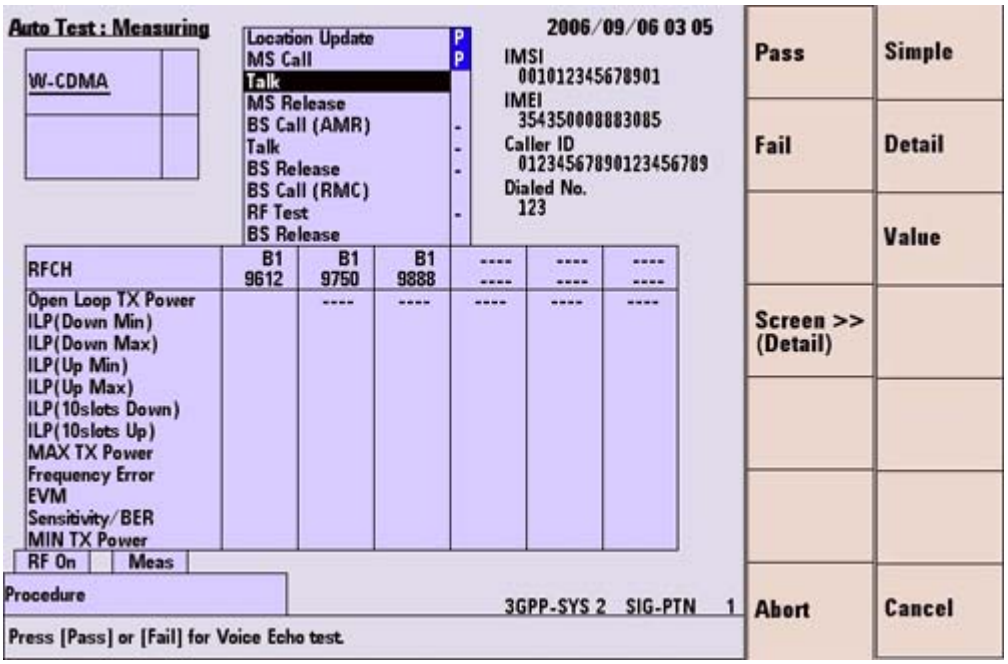


Figure 5-21 [Automatic Test: Measuring] Talk Detailed Screen

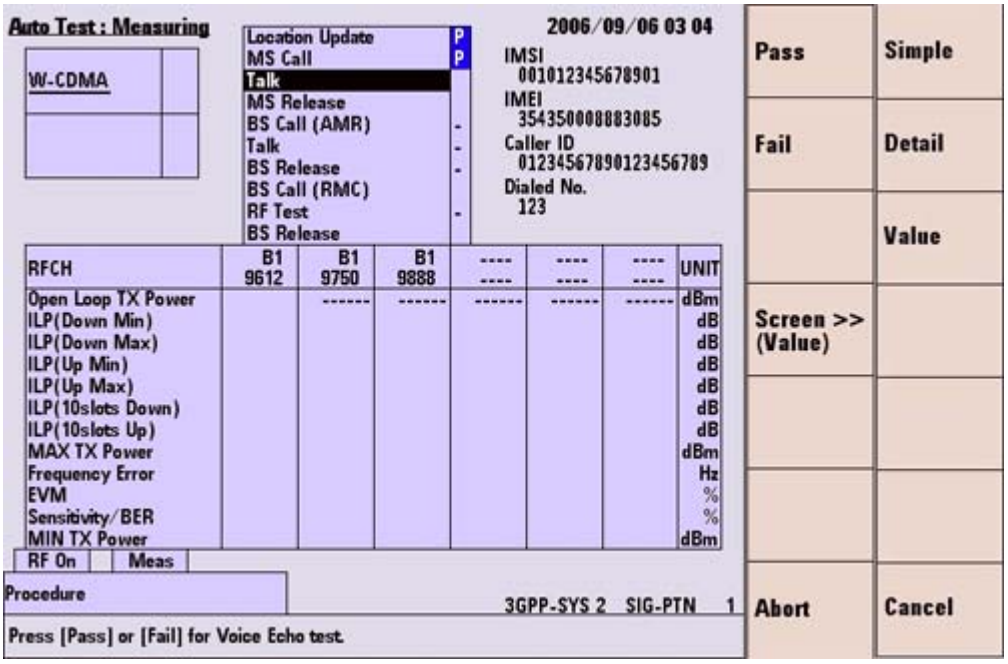


Figure 5-22 [Automatic Test: Measuring] Talk Value Screen

Softkey Menu Field

Softkey Menu 1

Pass: Press this softkey if your voice loop back from the mobile phone with good quality. Then, this softkey disappears and "P" is shown next to the "Talk" step.

Fail: Press this softkey if your voice loop back from the mobile phone with poor quality or your voice does not loop back from the mobile phone. Then, this softkey disappears and "F" is shown next to the "Talk" step.

Screen>>: Displays the softkey menu 2 containing the softkeys to select a display mode.

Abort: Aborts the test and returns to the [Stand-by] screen.

Softkey Menu 2

Simple: Displays a Pass/Fail result of whole measurement in the middle of the measurement result field in zoom.

Detail: Displays a Pass/Fail result at each item cell in the measurement result field.

Value: Displays a measurement value at each item cell in the measurement result field.

Cancel: Cancels selecting a display mode and returns to the softkey menu 1.

Screen Field

The information from the mobile phone and the tester is displayed at the upper right corner in the screen field. The description of the displayed information is shown in Table 5-11.

Table 5-11 Mobile Phone Information in [Auto Test: Measuring Talk] Screen

Item Information	Description
IMSI	Displays the International Mobile Subscriber Identity received from the mobile phone.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
Caller ID	Displays addresser number sent from the tester at BS Call execution. The set value is displayed at this state.
Dialed No.	Displays the dialed number received from the mobile phone at MS Call execution.

Message Field

The following message is displayed in the message field during Talk test on Measuring Talk screens. The user is required to respond to the operation message to evaluate the quality of loop back voice:

"Press [Pass] or [Fail] for Voice Echo test."

The word surrounded by [ ] in the message above denotes softkey.

Abort Screen

When the **Abort** softkey is pressed, the measurement is aborted.

Depending on their previous settings of the screen softkeys, selecting the **Simple**, the **Detail** or the **Value** softkey causes the tester to display the Stand-by aborted simplified screen, the Stand-by aborted detailed screen or the Stand-by aborted value screen. Figure 5-23 shows the simplified screen.

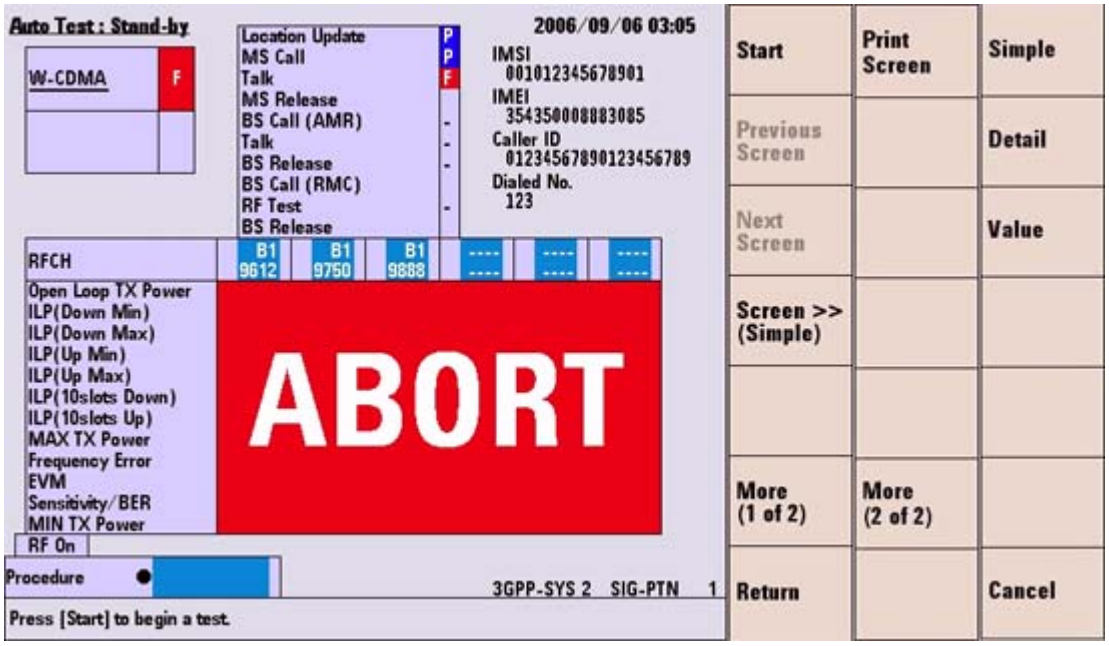


Figure 5-23 [Automatic Test: Stand-by] Aborted Simplified Screen

Softkey Menu Field

Softkey Menu 1

Start: Starts testing the mobile phone by Automatic Test.

Previous Screen: Changes the screen to the previous sequence one. This softkey is inactivated when the screen of Sequence 1 is displayed.

Next Screen: Changes the screen to the next sequence one. This softkey is inactivated when Sequence 2 is set to "Off" or the screen of Sequence 2 is displayed.

Screen>>: Displays the softkey menu 3 containing the softkeys to select a display mode.

More (1 of 2): Displays the softkey menu 2.

Return: Returns to the [Initial] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

More (2 of 2): Returns to the softkey menu 1.

Softkey Menu 3

Simple: Displays a Pass/Fail result of whole measurement in the middle of the measurement result field in zoom.

Detail: Displays a Pass/Fail result at each item cell in the measurement result field.

Value: Displays a measurement value at each item cell in the measurement result field.

Cancel: Cancels selecting a display mode and returns to softkey menu 1.

Screen Field

Set the input fields in the screen field according to the description in Figure 5-12 to execute a new test.

Table 5-12 [Auto Test: Abort] Screen Input Parameters

Input Field	Description
Procedure	Displays a list of parameter file names stored in the tester for selection if the tester contains parameter files. Select a file to recall for a test. If the tester is using a parameter file, the file name is shown in this field.

Table 5-12 [Auto Test: Abort] Screen Input Parameters (continued)

Input Field	Description
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. B1: Band 1 B2: Band 2 B3: Band 3 B4: Band 4 B5: Band 5 B6: Band6 The allowable range is as follows: Band 1: 9600 to 9900 (1920.0MHz to 1980.0MHz) Band 2: 9250 to 9550 (1850.0MHz to 1910.0MHz) 12 (1852.5MHz), 37 (1857.5MHz), 62 (1862.5MHz), 87 (1867.5MHz), 112 (1872.5MHz), 137 (1877.5MHz), 162 (1882.5MHz), 187 (1887.5MHz), 212 (1892.5MHz), 237 (1897.5MHz), 262 (1902.5MHz), 287 (1907.5MHz) Band 3: 8550 to 8925 (1710.0MHz to 1785.0MHz) Band 4: 8550 to 8775 (1710.0MHz to 1755.0MHz) 1162 (1712.5MHz), 1187 (1717.5MHz), 1212 (1722.5MHz), 1237 (1727.5MHz), 1262 (1732.5MHz), 1287 (1737.5MHz), 1312 (1742.5MHz), 1337 (1747.5MHz), 1362 (1752.5MHz) Band 5: 4120 to 4245 (824.0MHz to 849.0MHz) 782 (826.5MHz), 787 (827.5MHz), 807 (831.5MHz), 812 (832.5MHz), 837 (837.5MHz), 862 (842.5MHz) Band 6: 4150 to 4200 (830.0MHz to 840.0MHz) 812 (832.5MHz), 837 (837.5MHz) "---": Skip

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

The information from the mobile phone and the Tester as Table 5-13 is displayed at the upper right corner in the screen field.

Table 5-13 [Automatic Test] Aborted Screen Mobile Phone Information

Item Information	Description
IMSI	Displays the International Mobile Subscriber Identity received from the mobile phone.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
Caller ID	Displays addresser number sent from the Tester at BS Call execution.
Dialed No.	Displays the number dialed from the mobile phone at MS call execution.

Message Field

The following message is displayed in the message field during an aborted status:

"Press [Start] to begin a test."

The word surrounded by [ ] in the message field denotes the softkey.

Explanation

The measurement results up to an abort of the test are shown.

The status of the Tester is reset to stand-by.

The condition of the mobile phone is not ensured; therefore, the mobile phone power-on process is required to be repeated for a new test.

Sequence 2 Screen

Sequence 2 starts after completion of test in Sequence 1 when "Radio System 2" is set to "W-CDMA" on the Configuration: Test Sequence screen. If the "Radio System" is set to "----", Sequence 2 does not run.

When Sequence 2 starts, the Auto Test: Measuring screen shown in Figure 5-24 is displayed.

The status of sequences is shown at the bottom of the screen. The type of system in Sequence 2 is now underlined.

The test results of sequences are shown as follows:

- "P": Shown on blue background when the test is passed.
- "F": Shown on red background when the test is failed.

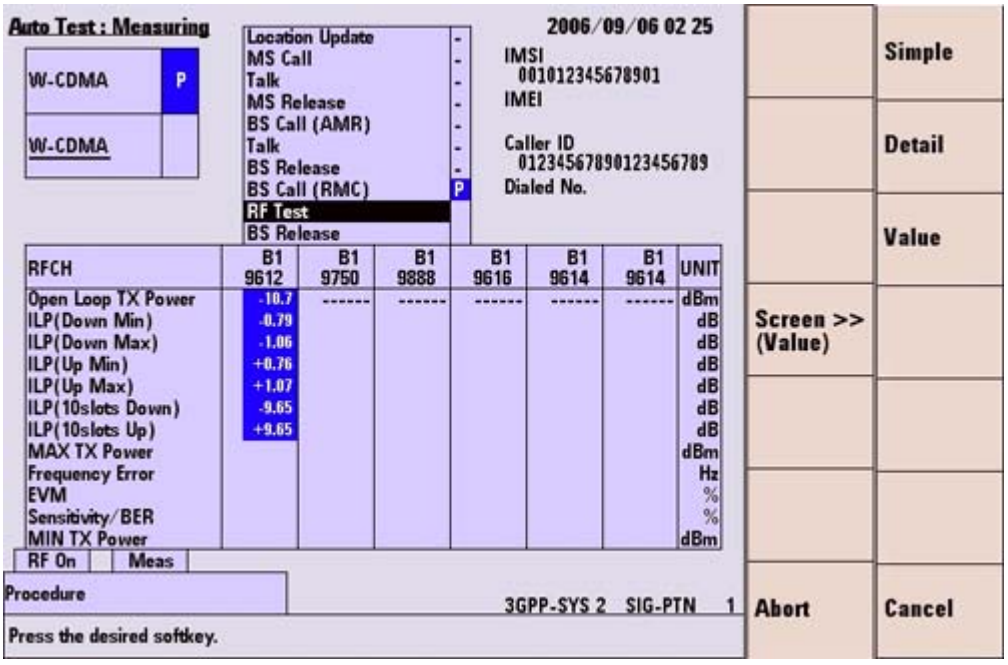


Figure 5-24 [Automatic Test: Measuring] Sequence 2 Simplified Screen

Softkey Menu Field

Softkey Menu 1

Screen>>: Displays the softkey menu 2 containing the softkeys to select a display mode.

Abort: Aborts the test and returns to the [Stand-by] screen.

Softkey Menu 2

Simple: Displays a Pass/Fail result of whole measurement in the middle of the measurement result field in zoom.

Detail: Displays a Pass/Fail result at each item cell in the measurement result field.

Value: Displays a measurement value at each item cell in the measurement result field.

Cancel: Cancels selecting a display mode and returns to the softkey menu 1.

Screen Field

The information from the mobile phone and the tester is displayed at the upper right corner in the screen field. The description of the displayed information is shown in Table 5-14.

Table 5-14 [Automatic Test] Sequence 2 Screen Mobile Phone Information

Item Information	Description
IMSI	Displays the default value of International Mobile Subscriber Identity. The preset value is 001010123389980.
IMEI	This field remains blank at this state.
Caller ID	Displays addresser number sent from the tester at BS Call execution. The set value is displayed at this state.
Dialed No.	This field remains blank at this state.

Measurement Result Screen

When all tests in preset sequences are completed, a Measurement Result screen is displayed in the Stand-by mode.

During the test, the user can then select the appropriate screen using the softkeys listed in Table 5-15. The screens shown are where both Sequence 1 and Sequence 2 are set.

Table 5-15 [Auto Test: Stand-by] Measurement Result Screen Selections

Softkey	Screen Displayed	See
Simple	[Auto Test: Stand-by] Measurement Result Simple screen	Figure 5-25
Detail	[Auto Test: Stand-by] Measurement Result Detail screen	Figure 5-26
Value	[Auto Test: Stand-by] Measurement Result Value screen	Figure 5-27

Measurement results are shown as follows:

- "Pass" or measurement value
  Shown on blue background when the measurement is passed.
- "Fail" or measurement value
  Shown on red background when the measurement is failed.

The measurement results are shown in different ways depending on the display mode.

- On the simplified screen, an enlarged "Pass" is shown in the middle of the measurement result field when all of the measurement items are passed. Or, an enlarged "Fail" is shown in the middle of the measurement result field when there is even one failed measurement in whole measurement.
- On the detailed screen, a Pass/Fail is shown at each item cell in the measurement result field.
- On the value screen, a measurement value is shown at each item cell in the measurement result field.

When some signaling test items and measurement items are set to be skipped on the Configuration: Test Sequence screen, each result of tests and measurements is shown by "-" or "---".

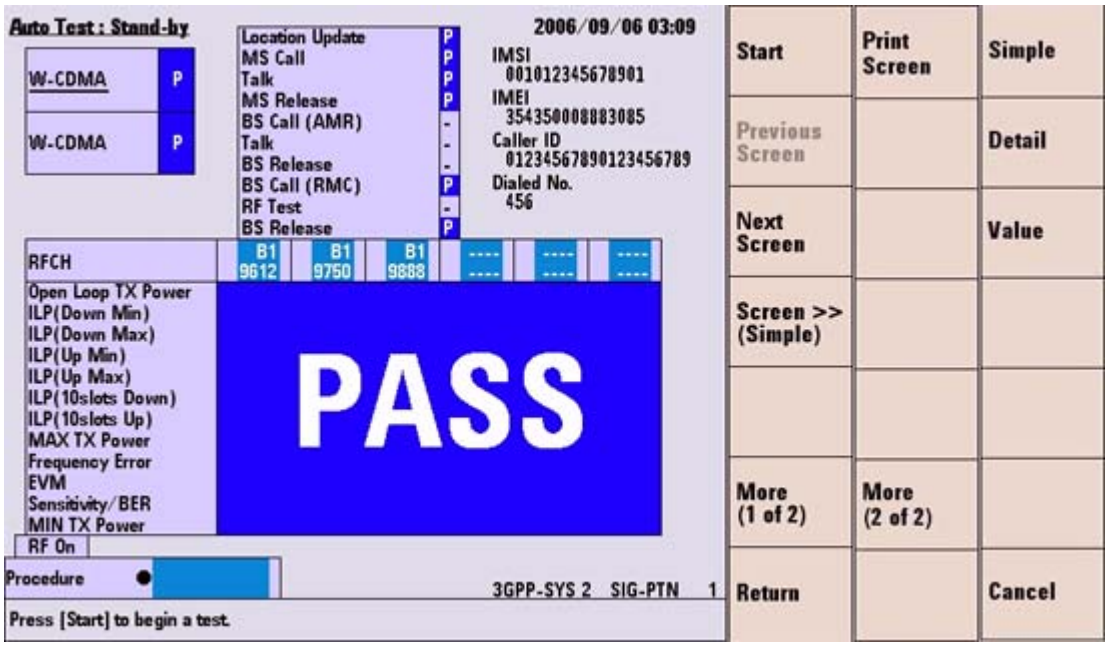


Figure 5-25 [Automatic Test: Stand-by] Measurement Result Simplified Screen

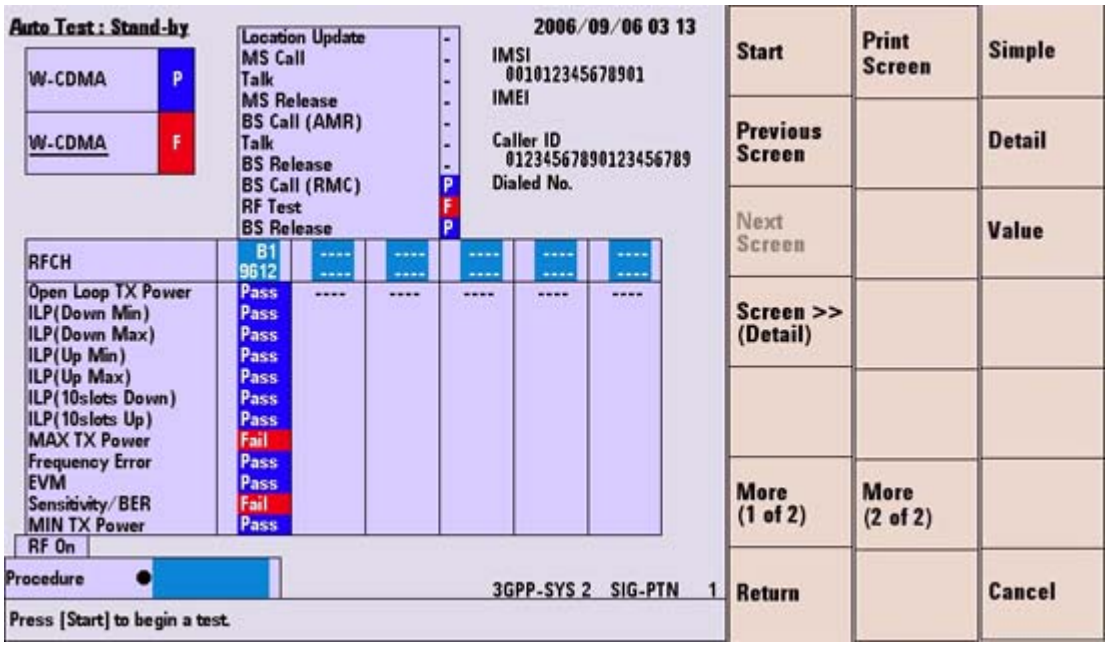


Figure 5-26 [Automatic Test: Stand-by] Measurement Result Detailed Screen

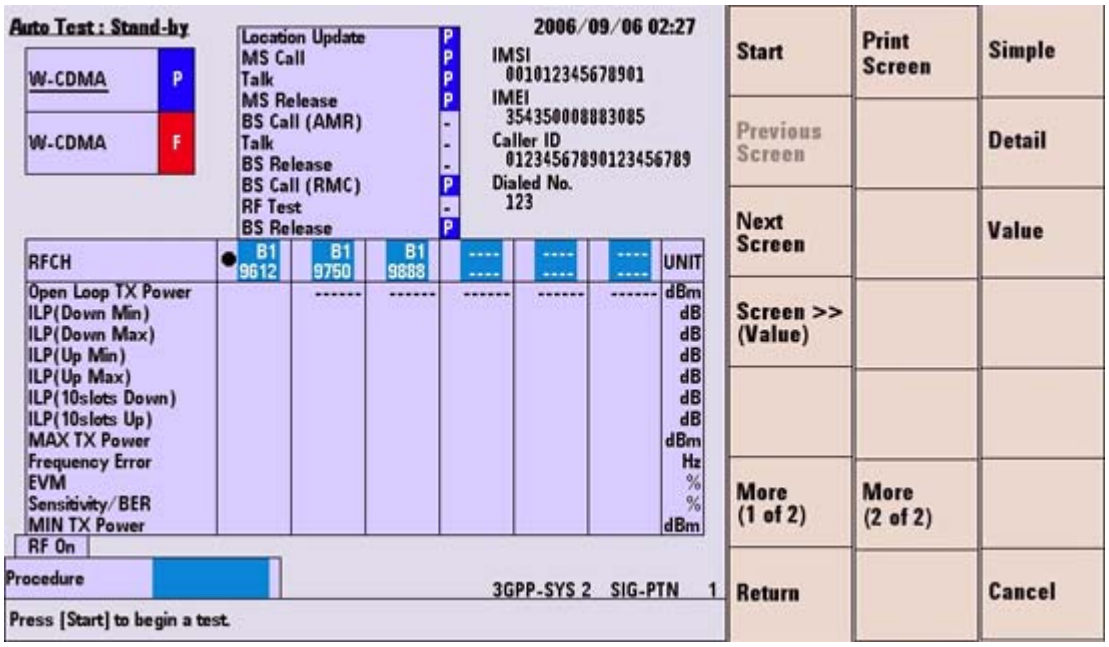


Figure 5-27 [Automatic Test: Stand-by] Measurement Result Value Screen

Softkey Menu Field

Softkey Menu 1

Start: Starts testing the mobile phone by Automatic Test.

Previous Screen: Changes the screen to the previous sequence one. This softkey is inactivated when the screen for Sequence 1 is displayed.

Next Screen: Changes the screen to the next sequence one. This softkey is inactivated when Sequence 2 is set to "Off" or the screen of Sequence 2 is displayed.

Screen>>: Displays the softkey menu 3 containing the softkeys to select a display mode.

More (1 of 2): Displays the softkey menu 2.

Return: Returns to the [Initial] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves an image of the screen into a USB memory device on the setting of the "Printer" input field on the [Configuration] screen.

More (2 of 2): Returns to the softkey menu 1.

Softkey Menu 3

Simple: Displays a Pass/Fail result of whole measurement in the measurement result field of the screen in zoom.

Detail: Displays a Pass/Fail result at each item cell in the measurement result field.

Value: Displays a measurement value at each item cell in the measurement result field.

Cancel: Cancels selecting a display mode and returns to softkey menu 1.

Screen Field

Set the input fields in the screen field according to the description in Table 5-16 to execute a new test.

Table 5-16 [Auto Test: Stand-by] Measurement Results Screen Input Field

Input Field	Description
Procedure	Displays a list of parameter file names stored in the tester for selection if the tester contains parameter files. Select a file to recall for a test. If the tester is using a parameter file, the file name is shown in this field.

Table 5-16 [Auto Test: Stand-by] Measurement Results Screen Input Field (continued)

Input Field	Description
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. B1: Band 1 B2: Band 2 B3: Band 3 B4: Band 4 B5: Band 5 B6: Band6 The allowable range is as follows: Band 1: 9600 to 9900 (1920.0MHz to 1980.0MHz) Band 2: 9250 to 9550 (1850.0MHz to 1910.0MHz) 12 (1852.5MHz), 37 (1857.5MHz), 62 (1862.5MHz), 87 (1867.5MHz), 112 (1872.5MHz), 137 (1877.5MHz), 162 (1882.5MHz), 187 (1887.5MHz), 212 (1892.5MHz), 237 (1897.5MHz), 262 (1902.5MHz), 287 (1907.5MHz) Band 3: 8550 to 8925 (1710.0MHz to 1785.0MHz) Band 4: 8550 to 8775 (1710.0MHz to 1755.0MHz) 1162 (1712.5MHz), 1187 (1717.5MHz), 1212 (1722.5MHz), 1237 (1727.5MHz), 1262 (1732.5MHz), 1287 (1737.5MHz), 1312 (1742.5MHz), 1337 (1747.5MHz), 1362 (1752.5MHz) Band 5: 4120 to 4245 (824.0MHz to 849.0MHz) 782 (826.5MHz), 787 (827.5MHz), 807 (831.5MHz), 812 (832.5MHz), 837 (837.5MHz), 862 (842.5MHz) Band 6: 4150 to 4200 (830.0MHz to 840.0MHz) 812 (832.5MHz), 837 (837.5MHz) "---": Skip

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

The information from the mobile phone and the tester is displayed at the upper right corner in the screen field. The description of each item can be found in Table 5-13.

The following are also displayed in the screen field.

- 3GPP-SYS and SIG-PTN
  "3GPP System" and "Signaling Pattern" currently set on the Configuration: Test Sequence and Configuration: Test Condition screens respectively are displayed on the lower-right corner of the screen.
- RF On indicator
  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the tester is output to the RF In/Out connector.

Message Field

The following message is displayed on the Stand-by Measurement Result screens:

"Press [Start] to begin a test."

The word surrounded by [ ] in the message field above denotes the softkey.

Manual Test

Overview

Manual Test Features

- Each test item can be executed manually.
- In the Manual Test, all test items are executed while the mobile phone and the Tester are connected by call control protocol.
- The following systems can be selected directly from the Manual Test screen. Required options are in parentheses.
- GSM (G00), GPRS (G00), EGPRS (G00, G03), HSDPA (W00, W06), cdma2000 MC-1x (C00, C01), cdma2000 1xEV-DO (C00, C01, C02)
- Using the System Handover function, change to GSM during connecting can be executed.

Setting Manual Test in the Configuration Mode

- Loss:

The path loss values for each band can be entered on the [Configuration: Test Condition (Loss)] screen to correct the RF attenuation between the mobile phone and the Tester. Refer to “Actual Input/Output Level and Correction" on page 4-19 for correction of input/output signal.

- Limits of measurement items:

Each measurement item can be measured and analyzed with test limits set in the [Configuration: Test Condition] screen.

RF Test in Manual Test

Table 5-17 describes the measurement items of RF test in Manual Test. The limits for measurement items can be set on the Configuration: Test Condition screen. Refer to Table 5-46, "[Configuration: Test Sequence] Screen Input Field," on page 5-153.

Table 5-17 Description of Manual Test Measurement Items

Measurement Item	Description
TX Power	Measures the TX power.
Frequency Error	Measures the frequency error.
EVM	Measures the error vector magnitude.
Origin Offset	Measures the origin offset.
BER	Measures the bit error rate with loopback using downlink and uplink.

NOTE

The default state at power on is the last setting stored in the internal memory of the Tester before power off.

For numeric value entry, the changing magnification softkey menu is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

TEST USIM

Insert the TEST USIM provided by Agilent in the mobile phone before performing any test. The tester will not be able to perform measurements with a USIM provided by cell phone operator or any other TEST USIMs.

Stand-by Screen

When the **Manual Test** softkey is pressed on the [Initial] screen, the [Manual Test: Stand-by] screen is displayed. When using the system other than W-CDMA, press **More (1 of 2)**, **System >>** and **W-CDMA** softkeys to change the system.

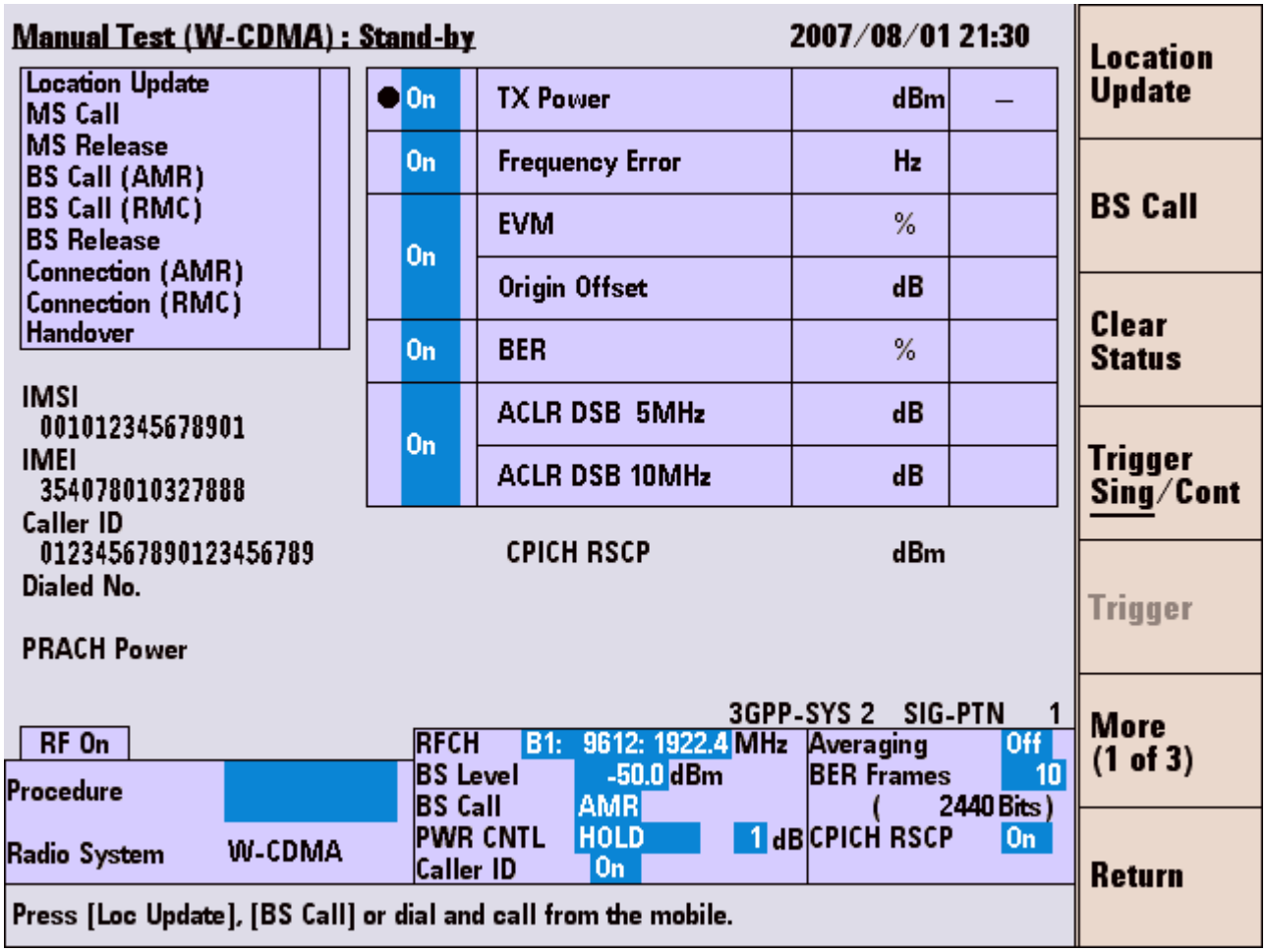


Figure 5-28 [Manual Test: Stand-by] Screen

Softkey Menu Field

Softkey Menu 1

Location Update: Executes the location update process for the Tester.

BS Call: Executes BS Call. A type of BS Call can be selected at the "BS Call" input field at the bottom of the screen.

- When type of BS Call is set to "AMR", the test step goes to the "Connection (AMR)". In this case, voice loop back test is executed.
- When type of BS call is set to "RMC", the test step goes to the "Connection (RMC)". In this case, the RF test is executed.

Clear Status: Clears Pass/Fail measurement results at signaling steps in the test flow.

Trigger Sing/Cont: Selects the trigger mode from "Sing" (single) and "Cont" (continuous).

- The "Sing" mode setting provides single measurement in RF test.
- The "Cont" mode setting provides continuous measurement in RF test.

Trigger: This softkey is inactivated on the [stand-by] screen. This softkey is activated in the Connection (RMC) status to start measurement.

More (1 of 2): Displays the softkey menu 2.

Return: Returns to the [Initial] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

RF Output On/Off: Selects the RF power output from "On" and "Off". When it is set to "On", it is set to the value of BS Level. When it is set to "OFF", the value is set below -120 dBm.

System >>: Displays softkey menu 3 to select system.

SMS: Displays the [SMS] screen.

More (2 of 2): Returns to the softkey menu 1.

Softkey Menu 3

GSM: Changes the system to GSM. The G00 Option is required.

GPRS: Changes the system to GPRS. The G00 Option is required.

EGPRS: Changes the system to EGPRS. The G00 Option and G03 Option are required.

W-CDMA: This softkey is unavailable.

HSDPA: Changes the system to HSDPA. The W06 Option is required.

CDMA2000>>: Displays the softkey menu 4 to select system of cdma2000.

Cancel: Cancels selecting system and returns to the softkey menu 2.

Softkey Menu 4

MC-1x: Changes the system to cdma2000 Mc-1x. The C00 Option and C01 Option are required.

1xEV-DO: Changes the system to cdma2000 1xEV-DO. The C00 Option, C01 Option and C02 Options are required.

Cancel: Cancels selecting system and returns to the softkey menu 3.

Screen Field

Set the input fields in the screen field according to the description in Table 5-18 to execute a new test.

Table 5-18 [Manual Test: Stand-by] Screen Input Field

Input Field	Description
Measurement item selection	Sets whether or not to execute a group of measurement items or each measurement item. • TX Power • Frequency Error • EVM, Origin Offset • BER • Selects "On" or "Off". • On: Executes the measurement item. • Off: Skips the measurement item. • Refer to Table 5-17 about the details of measurement items.

Table 5-18 [Manual Test: Stand-by] Screen Input Field

Input Field	Description
Procedure	Displays a list of parameter file names stored in the Tester for selection if the Tester contains parameter files. Select a file to recall parameters for a test. If the Tester is using a parameter file, the file name is shown in this field.
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1: 9600 to 9900 (1920.0 MHz to 1980.0 MHz) • Band 2: 9250 to 9550 (1850.0 MHz to 1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz) • Band 3: 8550 to 8925 (1710.0 MHz to 1785.0 MHz) • Band 4: 8550 to 8775 (1710.0 MHz to 1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz) • Band 5: 4120 to 4245 (824.0 MHz to 849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837 (837.5 MHz), 862 (842.5 MHz) • Band 6: 4150 to 4200 (830.0 MHz to 840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz)
BS Level †	Sets a RF output level of the Tester. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps.
BS Call	Selects "AMR" or "RMC" for BS Call in execution.
PWR CNTL	Sets the power control level of the mobile phone to "HOLD", "CNT UP", or "CNT DWN" and also sets a control value. • HOLD: Sets HOLD • CNT UP: Increases the power continuously. • CNT DWN: Decreases the power continuously. Set TPC Algorithm at "TPC Algorithm" field on the [Configuration: Test Condition] screen. The allowable range for the control value is from 1 dB to 99 dB in 1 dB step.

Table 5-18 [Manual Test: Stand-by] Screen Input Field

Input Field	Description
Caller ID	Sets if the Tester displays an addresser number on the screen or not. • On: Displays the number • Off: Not display the number
Averaging	Averages respective measurement values of Frequency Error and EVM. Set the averaging number from 2 to 99 or "Off". When this function is not required, select "Off".
BER Frames †	Sets the number of test frames for BER measurement. The allowable range is from 1 to 4100 in 1 step. (1 Frame = 1 TTI) Also, a bit number according to BER Frames is displayed between parentheses. The bit number is calculated by an equation "BER Frames multiplied by 244". While BER Frames is entered, The bit number is displayed in conjunction with the value of BER Frames.
CPICH RSCP	Sets whether or not to display the value of CPICH received code power reported from the mobile phone. Select "On" or "Off". • On: Display the value of CPICH RSCP and also activates the Measurement CPICH RSCP softkey in the connection status. • Off: Not display the value of CPICH RSCP. If this is set to "On" in the Stand-by status, the value of CPICH RSCP is reported once after MS or BS call is started and displayed on screen.

† The changing magnification softkey is activated. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

The information from the mobile phone and the tester is displayed at the upper right corner in the screen field. The description of the displayed information is shown in Table 5-19.

Table 5-19 [Manual Test: Stand-by] Screen Mobile Phone Information

Item Information	Description
IMSI	Displays the International Mobile Subscriber Identity received from the mobile phone.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
Caller ID	Displays addresser number sent from the Tester at BS Call execution.
Dialed No.	Displays the dialed number received from the mobile phone at MS call execution.
PRACH Power	Displays PRACH Power transmitted from the mobile phone.

Table 5-19 [Manual Test: Stand-by] Screen Mobile Phone Information

Item Information	Description
CPICH RSCP	Displays CPICH received code power reported from the mobile phone.

The followings are also displayed in the screen field.

- 3GPP-SYS and SIG-PTN
  The 3GPP system and the signaling pattern that are currently set on the [Configuration: Test Condition] screen are displayed at the lower-right corner of the screen.
- RF On indicator
  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the Tester is output to the RF In/Out connector.

Message Field

The following message is displayed in the message field on the Stand-by screen:

"Press [Location Update], [BS Call] or dial and call from the mobile."

The words surrounded by [ ] in the above message field denotes the softkey.

Explanation

Location Update can be started in the following two ways:

- Turn the mobile phone on and then location update starts automatically.
- Press the **Location Update** softkey to execute location update in order to start a new test.

Location Update Screen

When press the **Location Update** softkey or turn on the mobile phone, location update is started and the screen as Figure 5-29 is displayed. When the location update is succeeded, "P" is displayed at the "Location Update" step with blue background.

The **Location Update** softkey is able to control (available or unavailable) by the "LU Softkey" field on the [Configuration: Test Condition] screen.

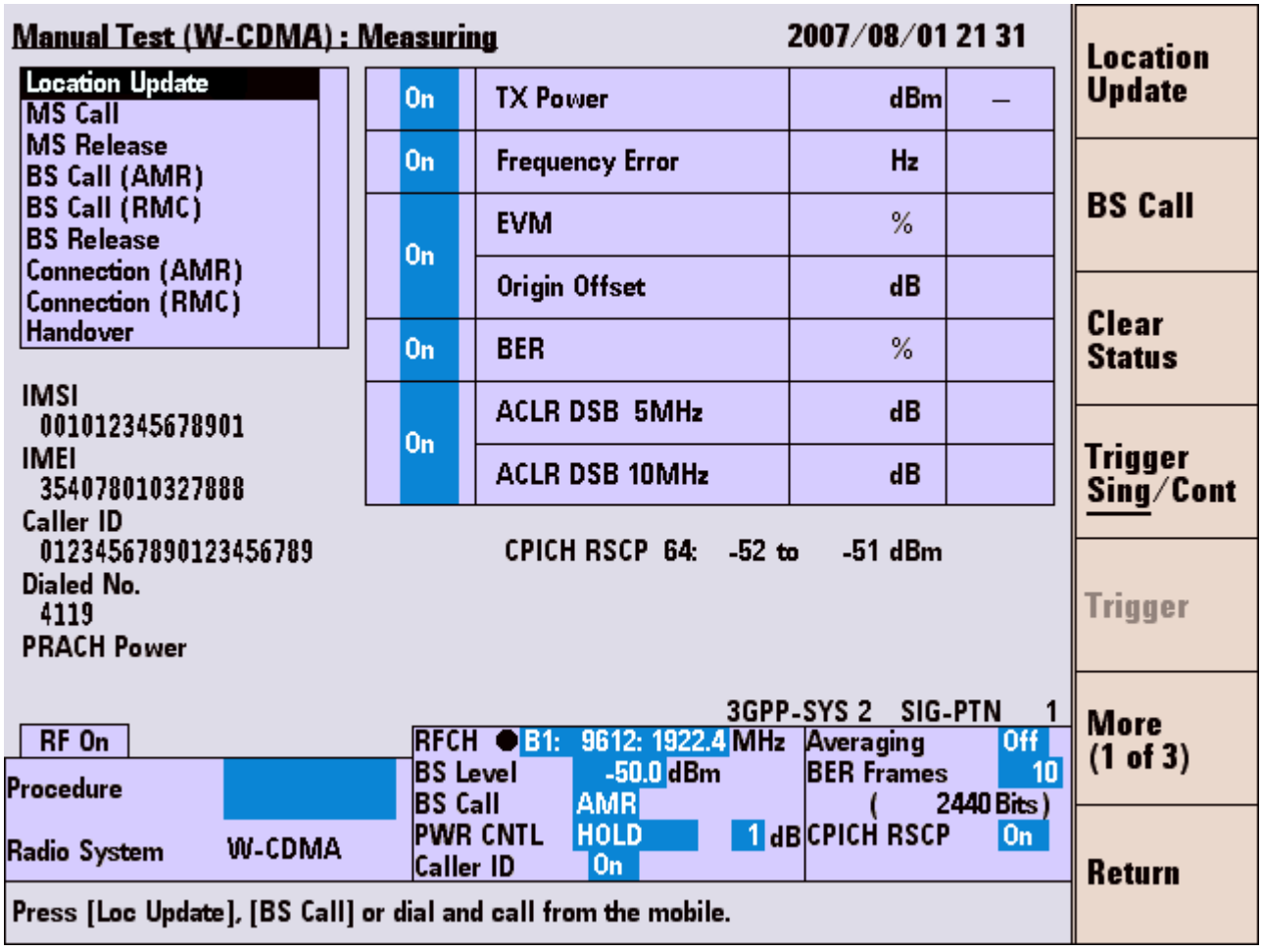


Figure 5-29 [Manual Test: Measuring] Location Update Screen

When the location update is passed, start the test with the following two method.

- Press the BS Call softkey to start the BS Call.
- Dial and press an Off Hook button on the mobile phone.

When one of above procedures is performed, the screen changes to a [Measuring] screen, and the test on the mobile phone starts.

Softkey Field

Softkey Menu

Abort: Aborts location update. This softkey does not appear when location update is started by the operation of turning the mobile phone on. After abort of location update, the screen returns to the Stand-by status.

Screen Field

The input field in the screen field can be changed for a new test. Refer to Table 5-18, “[Manual Test: Stand-by] Screen Input Field,” on page 5-63. Also, refer to Table 5-19, “[Manual Test: Stand-by] Screen Mobile Phone Information,” on page 5-65 for the information from the mobile phone that is displayed in the screen field.

Also, the followings are displayed in the screen field.

- 3GPP-SYS and SIG-PTN

  The 3GPP system and the signaling pattern that are currently set on the [Configuration: Test Condition] screen are displayed at the lower-right corner of the screen.

- RF On indicator

  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the Tester is output to the RF In/Out connector.

MS Call Connection Response Screen

If the "Connection Wait" field on the [Configuration: Test Condition] screen is set to a number other than 0, the screen as Figure 5-30 is displayed when manually responding to the call from the mobile phone becomes acceptable on the Tester.

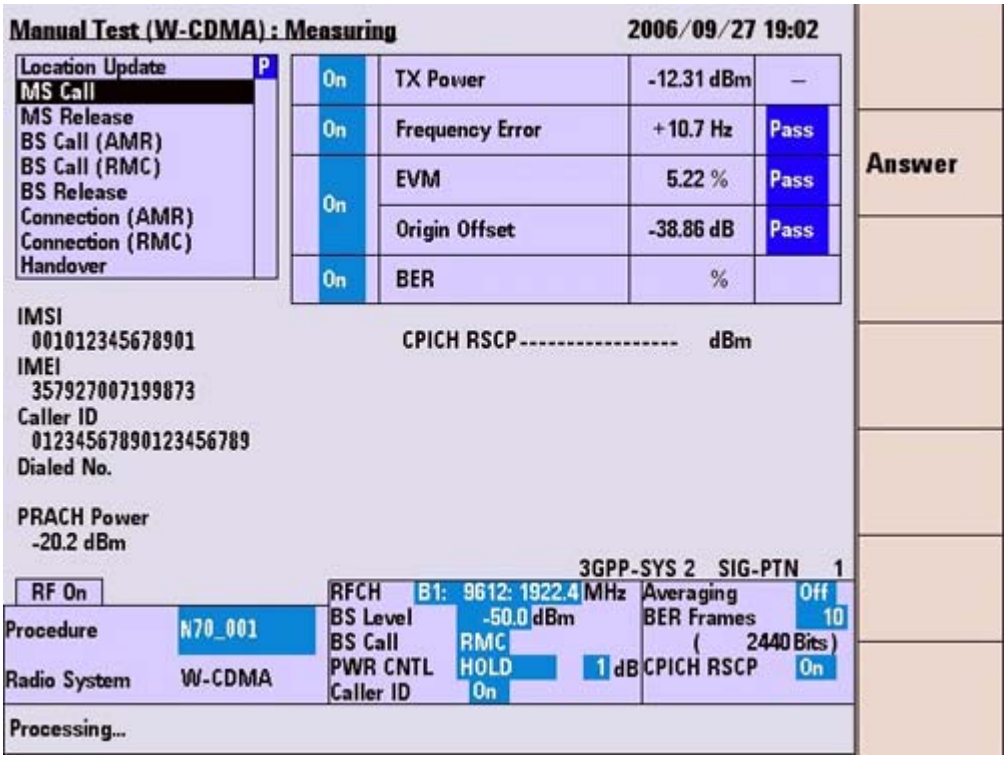


Figure 5-30 [Manual Test: Measuring] MS Call Connection Response Screen

Softkey Field

Softkey Menu

Answer: Responds to the call from the mobile phone if this softkey is pressed within the specified time.

This is not displayed until manual response becomes to be allowed. Also, this is not displayed in the case of immediate automatic response setting ("Connection Wait" is set to 0). After the specified time is over, the Tester automatically respond to the call.

Screen Field

The input field in the screen field can be changed for a new test. Refer to Table 5-18, “[Manual Test: Stand-by] Screen Input Field,” on page 5-63.

The information from the mobile phone and the tester, as shown in Table 5-20, is displayed at the lower left corner in the screen field.

Table 5-20 MS Call Connection Response Screen Mobile Phone Information

Item Information	Description
IMSI	Displays the default value of International Mobile Subscriber Identity received from the mobile phone.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
Caller ID	Displays addresser number sent from the Tester at BS Call execution.
Dialed No.	Displays the dial number dialed from the mobile phone.
PRACH Power	Displays the dial number dialed from the mobile phone.
CPICH RSCP	Displays CPICH received code power reported from the mobile phone.

The following are also displayed on the screen field:

- 3GPP-SYS and SIG-PTN
  The 3GPP system and the signaling pattern that are currently set on the Configuration: Test Condition screen are displayed at the lower-right corner of the screen.
- RF On indicator
  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the tester is output to the RF In/Out connector.

Message Field

The following message is displayed in the message field on the MS Call Connection Response screen.

"Press [Answer] for answer MS Call."

The word surrounded by [ ] in the message field above denotes softkey.

Explanation

When the **Answer** softkey is pressed in respond to the call or if the specified time is over, the tester automatically responds to the call. The following measurement result is then displayed in the field right next to "MS Call" step.

- "P": Shown on blue background when call setup is executed properly and MS Call passes.
- "F": Shown on red background when MS Call fails.

Connection Screen

When a call connection between the mobile phone and the tester is established, a Measuring Connection screen is displayed. The screen can be for either MS Call (Figure 5-31) or BS Call AMR (Figure 5-32) or BS Call RMC (Figure 5-33).

RF Test is executed only with BS Call RMC.

- When the **Trigger Sing/Cont** softkey is set to **Cont**, continuous measurement starts as soon as the Measuring Connection screen is displayed.
- When the **Trigger Sing/Cont** softkey is set to **Sing**, pressing the **Trigger** softkey starts a single measurement.
- During Connection (AMR) step, the **Trigger Sing/Cont** softkey and the **Trigger** softkey are deactivated.

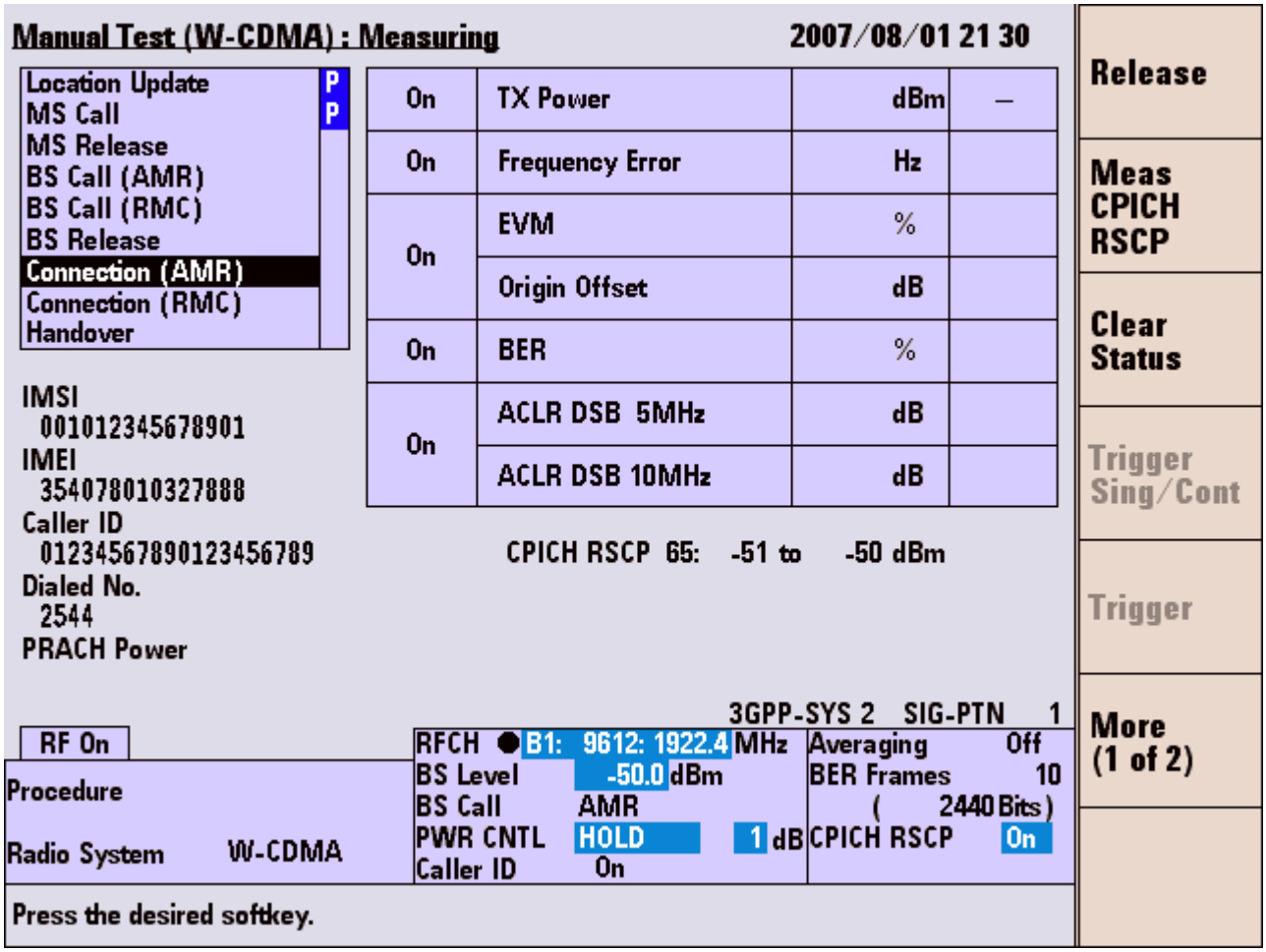


Figure 5-31 [Manual Test: Measuring] MS Call Connection Screen

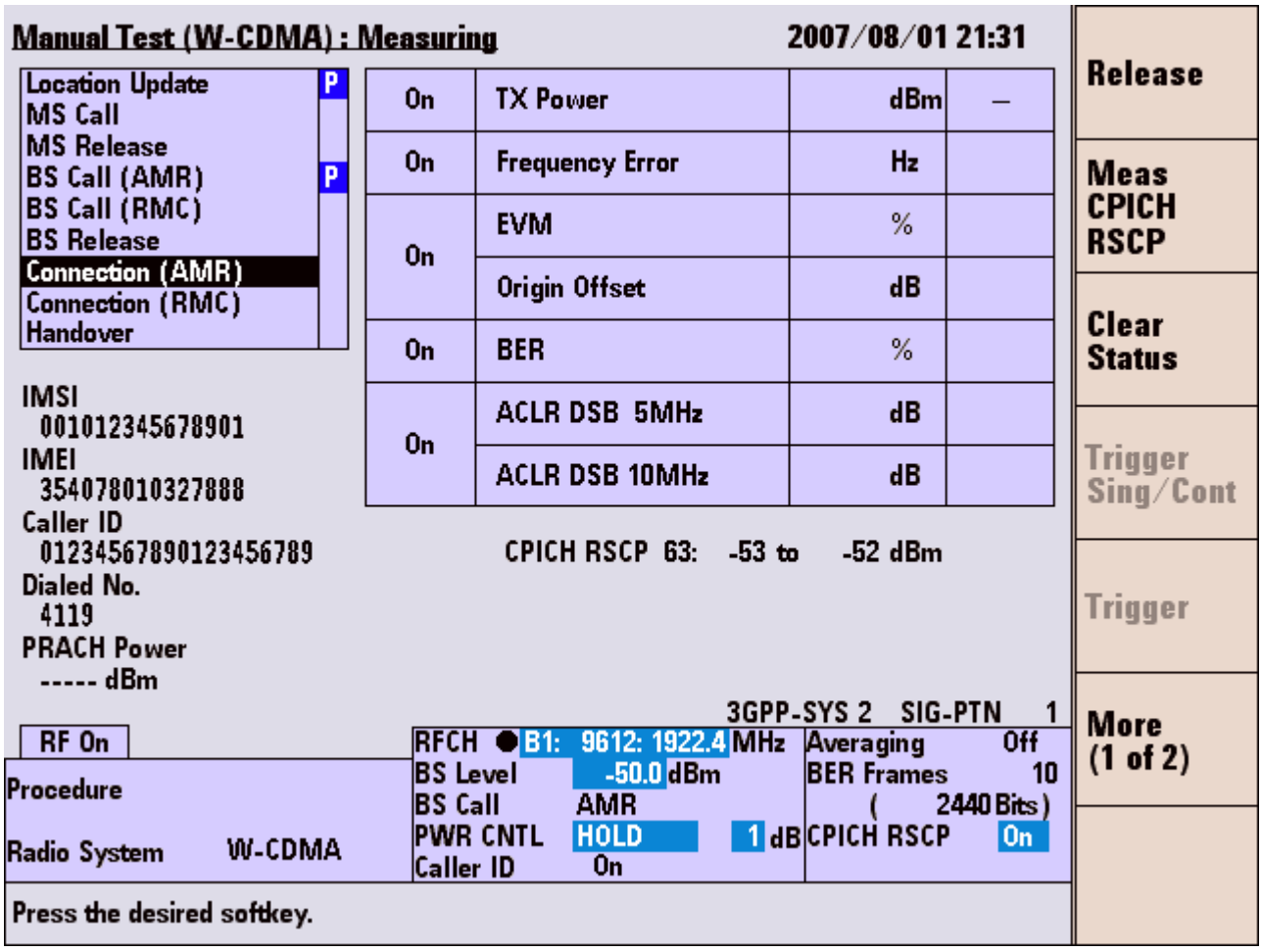


Figure 5-32 [Manual Test: Measuring] BS Call AMR Connection Screen

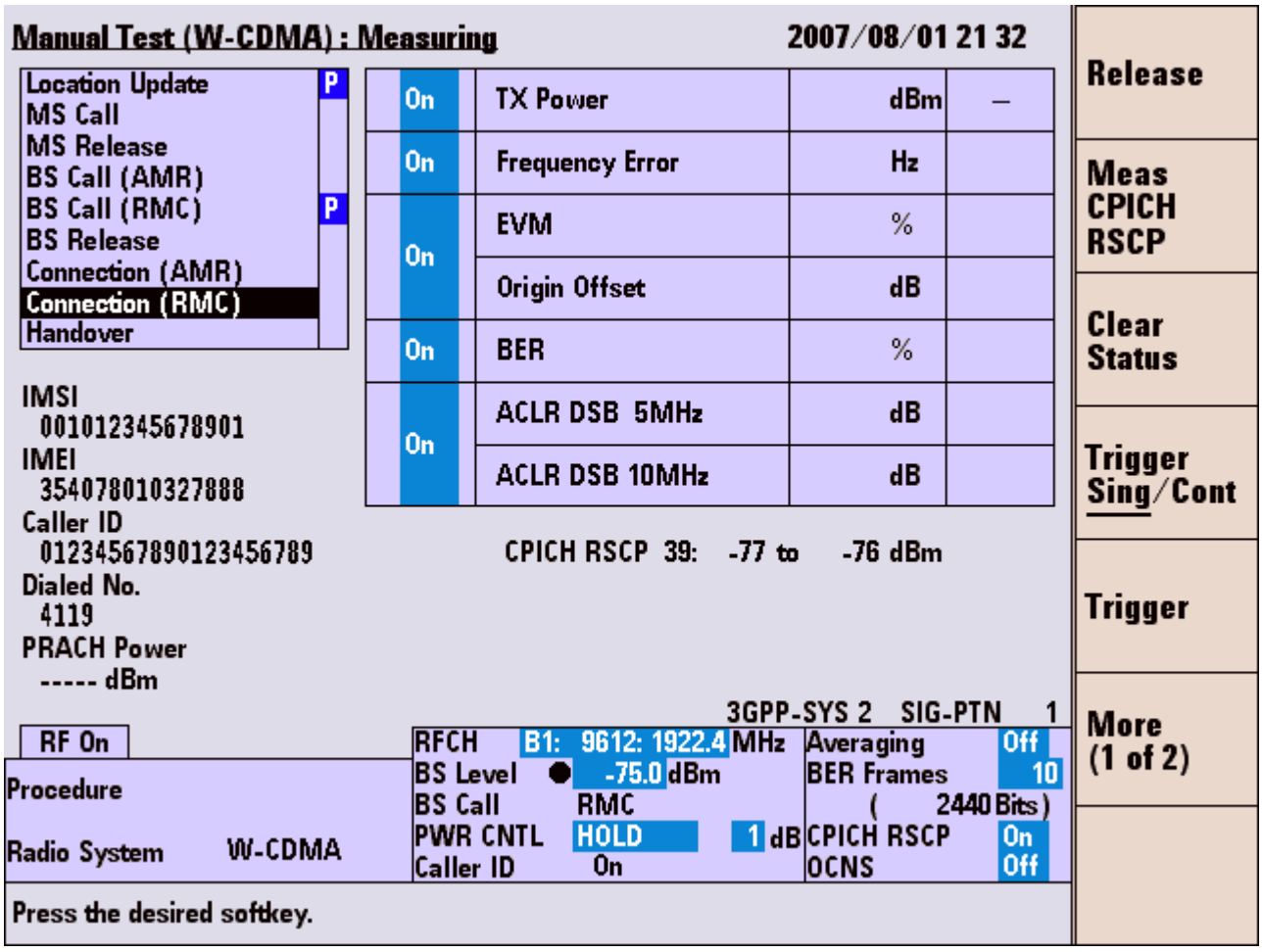


Figure 5-33 [Manual Test: Measuring] BS Call RMC Connection Screen

Softkey Menu Field

Softkey Menu 1

Release: Executes BS Release. Release the call from the Tester.

Measurement CPICH RSCP: Makes the mobile phone report the value of CPICH RSCP. This softkey is inactivated when the "CPICH RSCP" input field is set to "Off".

Clear Status: Clears Pass/Fail measurement results at signaling steps in the test flow.

Trigger Sing/Cont: Selects the trigger mode from "Sing" (single) and "Cont" (continuous). This softkey is activated only at Connection (RMC) step.

- The "Sing" mode setting provides single measurement.
- The "Cont" mode setting provides continuous measurement.

Trigger: Starts single measurement. Measurement can be executed only at the Connection (RMC) step.

More (1 of 2): Displays the softkey menu 2.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

System H.O. (GSM): Executes system handover to GSM. Displayed only when this function is available.

More (2 of 2): Returns to the softkey menu 1.

Screen Field

Set the input fields in the screen field according to the following description of Table 5-21 to change parameters for current test.

Table 5-21 [Manual Test] Connection Screen Input Field

Input Field	Description
Measurement item selection	Sets whether or not to execute a group of measurement items or each measurement item. • TX Power • Frequency Error • EVM, Origin Offset • BER Selects "On" or "Off". • On: Executes the measurement item. • Off: Skips the measurement item. In connection status, this setting is available only for BS Call RMC.
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band6 The allowable range is as follows: • Band 1: 9600 to 9900 (1920.0MHz to 1980.0MHz) • Band 2: 9250 to 9550 (1850.0MHz to 1910.0MHz) 12 (1852.5MHz), 37 (1857.5MHz), 62 (1862.5MHz), 87 (1867.5MHz), 112 (1872.5MHz), 137 (1877.5MHz), 162 (1882.5MHz), 187 (1887.5MHz), 212 (1892.5MHz), 237 (1897.5MHz), 262 (1902.5MHz), 287 (1907.5MHz) • Band 3: 8550 to 8925 (1710.0MHz to 1785.0MHz) • Band 4: 8550 to 8775 (1710.0MHz to 1755.0MHz) 1162 (1712.5MHz), 1187 (1717.5MHz), 1212 (1722.5MHz), 1237 (1727.5MHz), 1262 (1732.5MHz), 1287 (1737.5MHz), 1312 (1742.5MHz), 1337 (1747.5MHz), 1362 (1752.5MHz) • Band 5: 4120 to 4245 (824.0MHz to 849.0MHz) 782 (826.5MHz), 787 (827.5MHz), 807 (831.5MHz), 812 (832.5MHz), 837 (837.5MHz), 862 (842.5MHz) • Band 6: 4150 to 4200 (830.0MHz to 840.0MHz) 812 (832.5MHz), 837 (837.5MHz)

Table 5-21 [Manual Test] Connection Screen Input Field

Input Field	Description
BS Level †	Sets a RF output level for the tester. The allowable range is from -115.0 to -18.0dBm in 0.1dB steps.
PWR CNTL	Sets control for power control level of the mobile phone to "UP", "DOWN", "CNT UP", or "CNT DWN" and also a control value. • HOLD: Sets HOLD. • Up: Increases the power control value in the set control value. • Down: Decreases the power control value in the set control value. • CNT UP: Increases the control value continuously. • CNT DWN: decreases the power control value continuously. The setting is done with the following operations. • When this field is changed from "HOLD" to "UP" or "DOWN", this setting is automatically returned to "HOLD" after completion of this setting. • When this field is set to "CNT UP" or "CNT DWN", the setting is remained after release the call. • When this field is changed from "CNT UP" to "CNT DWN", this setting is remained as "CNT UP" after completion of this setting. (vice versa) Set TPC Algorithm at "TPC Algorithm" field on the [Configuration: Test Condition] screen. The allowable range for the control value is from 1 dB to 99 dB in 1 dB step.
Averaging	Averages respective measurement values of Frequency Error and EVM. Set the averaging number from 2 to 99 or "Off". When this function is not required, select "Off". In connection status, this setting is available only for BS Call RMC.
BER Frames †	Sets the number of test frames for BER measurement. The allowable range is from 1 to 4100 in 1 step. (1 Frame = 1 TTI) Also, a bit number determined from the BER Frames is displayed between parentheses. The bit number is calculated by multiplying the BER Frame by 244. When the BER Frames is entered, the bit number is displayed in conjunction with the value of BER Frames In connection status, this setting is available only for BS Call RMC.
OCNS	Sets the OCNS. Select "On" or "Off". • On: Outputs OCNS. • Off: Does not output OCNS. This is displayed and settable only in the Connection (RMC) state. When the status changes from BS Call to Connection (RMC), OCNS becomes "Off". Also, this will be reset to "Off" in the stand-by status even this is set to "On" in the Connection (RMC) status.
CPICH RSCP	Sets whether or not to display the value of CPICH RSCP reported from the mobile phone. Select "On" or "Off". On: Displays the value of CPICH RSCP and also activates the **Measurement CPICH RSCP** softkey in the connection status. Off: Do not display the value of CPICH RSCP. If this is set to "On" in the Stand-by status, the value of CPICH RSCP is reported once after MS or BS call is started and displayed on screen.

† The changing magnification softkey is available. "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

The information from the mobile phone and the tester, as shown in Table 5-22, is displayed at the lower left corner in the screen field.

Table 5-22 [Manual Test] Connection Screen Mobile Phone Information

Item Information	Description
IMSI	Displays the International Mobile Subscriber Identity received from the mobile phone.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
Caller ID	Displays addresser number sent from the tester at BS Call execution.
Dialed No.	Displays the dialed number received from the mobile phone at MS call execution. Keypad information (IA5 characters) of DTMF (Dial Tone Multi Frequency) is displayed up to 20 digits in the order of the dialed number sent from the mobile phone. New numbers are displayed right next to any existing numbers on the screen. When the number of digits reaches 20, the digits scroll to left and the oldest digit is deleted. If the connection is made by an emergency call, "Emergency Call" display is deleted and number from which the call was made from the mobile phone is displayed at the start position of the line.
PRACH Power	Displays PRACH Power transmitted from the mobile phone.
CPICH RSCP	Displays CPICH received code power reported from the mobile phone.

The following are also displayed on the screen field:

- 3GPP-SYS and SIG-PTN
  The 3GPP system and the signaling pattern that are currently set on the Configuration: Test Condition screen are displayed at the lower-right corner of the screen.
- RF On indicator
  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the tester is output to the RF In/Out connector.

Message Field

The following message is displayed in the message field on the Connection screens:

"Press the desired softkey."

Measuring Screen

At the Connection (RMC) step, RF Test can be executed. Measurement is started on the Measuring screen shown in Figure 5-34.

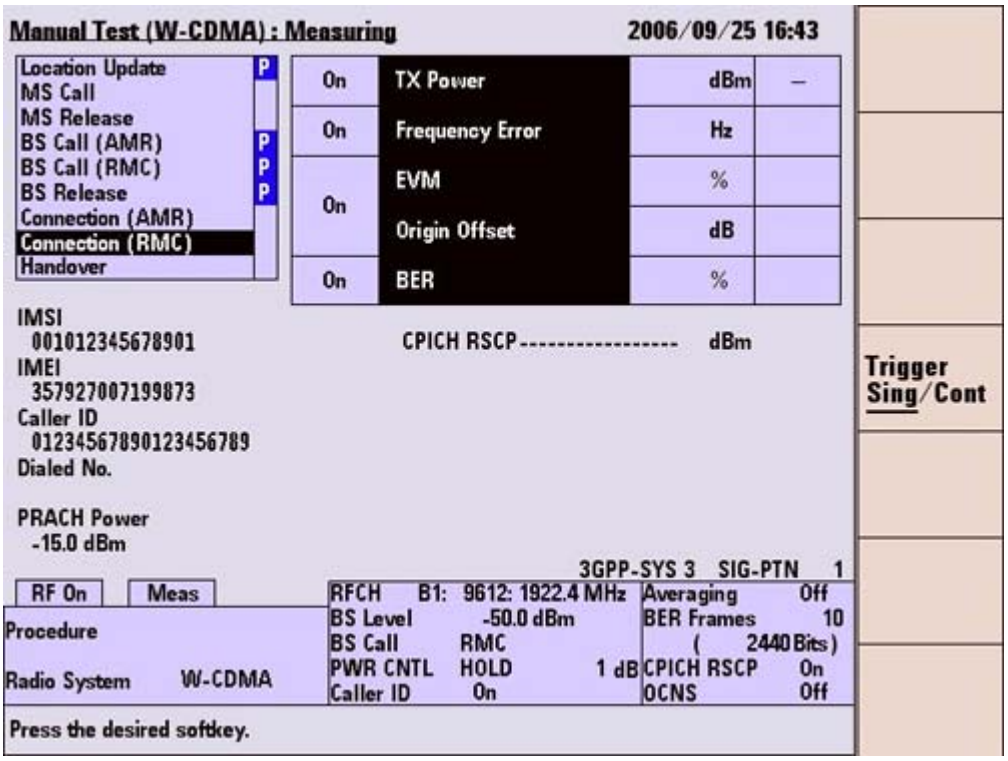


Figure 5-34 [Manual Test: Measuring] BS Call RMC Screen

Softkey Field

Softkey Menu

Trigger Sing/Cont: Selects the trigger mode from "Sing" (single) and "Cont" (continuous). This softkey is activated only at the Connection (RMC) step.

- When the trigger mode is changed from "Sing" to "Cont", continuous measurement starts.
- When the trigger mode is changed from "Cont" to "Sing", softkey disappears while the measurement is aborted.

Message Field

The following message is displayed on the Measuring screen:

"Press the desired softkey."

CPICH RSCP Screen

At the Connection step, when the **Measurement CPICH RSCP** softkey is pressed, the Tester makes the mobile phone report the value of CPICH RSCP.

Set the "CPICH RSCP" input field to "On" in order to enable the CPICH RSCP report.

The value is displayed after one CPICH RSCP report.

Figure 5-35 is the screen during CPICH RSCP report in the BS call RMC connection status.

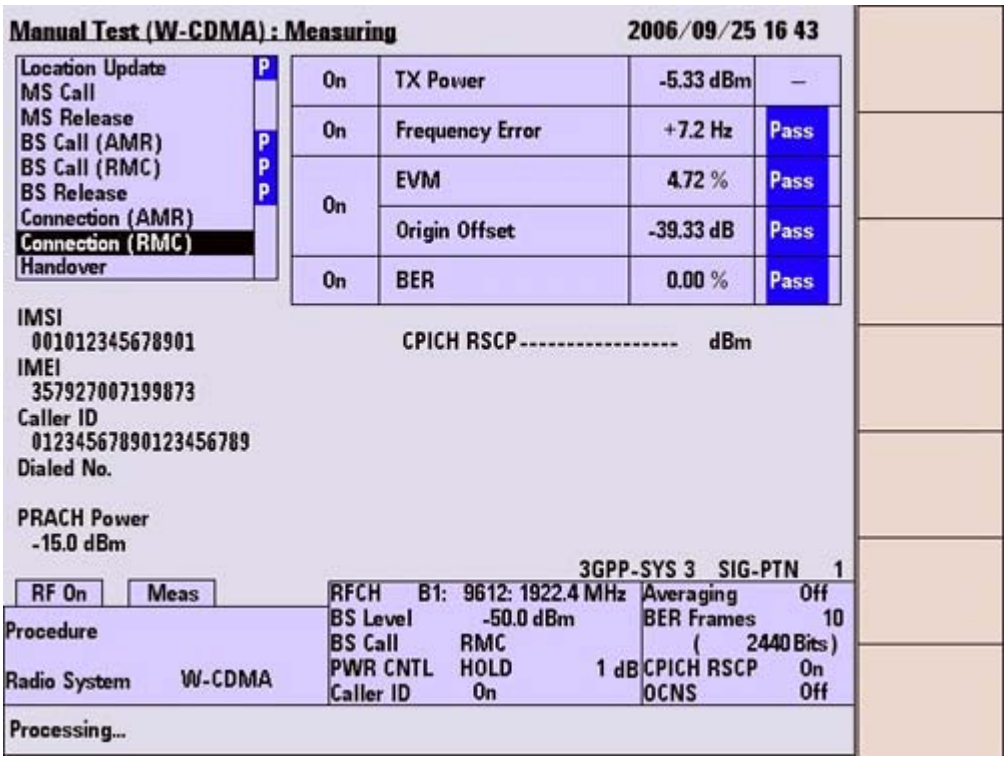


Figure 5-35 [Manual Test: Measuring] CPICH RSCP Screen

Message Field

The following message is displayed on the Measuring screen:

"Processing..."

Measurement Result Screen

When measurement is completed, a [Measuring] Measurement Result screen is displayed.

- To end the test in BS Call connection, press the Release softkey to disconnect from the Tester.
- To end the test in MS call connection, press an On Hook button on the mobile phone to disconnect from the mobile phone.

When the disconnection is completed, a [Stand-by] Measurement Result screen is displayed.

- RF test can be executed only at the Connection (RMC) step. Measurement result values of RF test are shown next to the measurement item cells, and Pass/Fail results are also shown right next to those measurement result values. Refer to Figure 5-36.
- RF test is not executed at the Connection (AMR) step. The Pass/Fail results of relevant test items in the test flow are shown next to those items. Refer to Figure 5-37.
- “Pass" is shown on blue background when the measurement result is passed. Or, "Fail" is shown on red background when the measurement result is failed.

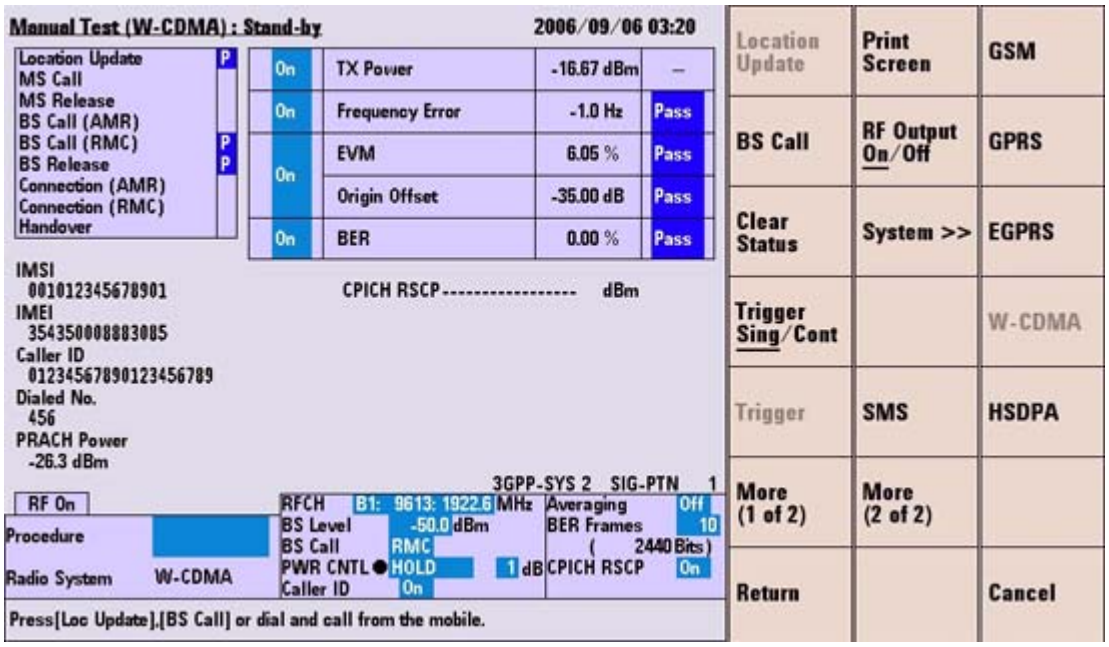


Figure 5-36 [Manual Test: Stand-by] BS Call RMC Measurement Result Screen

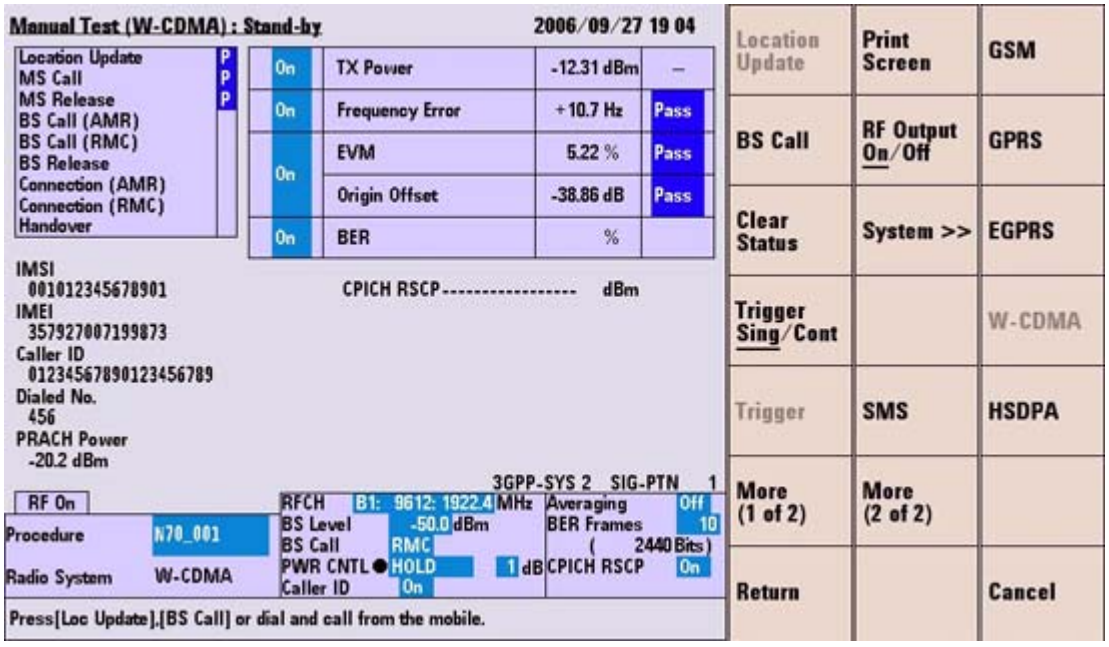


Figure 5-37 [Manual Test: Stand-by] MS Call Measurement Result Screen

Softkey Menu Field

Softkey Menu 1

Location Update: Executes the location update process for the Tester.

BS Call: Executes BS Call. A type of BS Call can be selected at the "BS Call" input field at the bottom of the screen.

- When type of BS Call is set to "AMR", the test step goes to the "Connection (AMR)". In this case, voice loop back test is executed.
- When type of BS call is set to "RMC", the test step goes to the "Connection (RMC)". In this case, the RF test is executed.

Clear Status: Clears Pass/Fail measurement results at signaling steps in the test flow.

Trigger Sing/Cont: Selects the trigger mode from "Sing" (single) and "Cont" (continuous).

- The "Sing" mode setting provides single measurement in RF test.
- The "Cont" mode setting provides continuous measurement in RF test.

Trigger: This softkey is inactivated on the [stand-by] screen. This softkey is activated in the Connection (RMC) status to start measurement.

More (1 of 2): Displays the softkey menu 2.

Return: Returns to the [Initial] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

RF Output On/Off: Selects the RF power output from "On" and "Off". When it is set to "On", it is set to the value of BS Level. When it is set to "OFF", the value is set below -120 dBm.

System >>: Displays softkey menu 3 to select system.

SMS: Displays the [SMS] screen.

More (2 of 2): Returns to the softkey menu 1.

Softkey Menu 3

GSM: Changes the system to GSM. The G00 Option is required.

GPRS: Changes the system to GPRS. The G00 Option is required.

EGPRS: Changes the system to EGPRS. The G03 Option is required.

W-CDMA: This softkey is unavailable.

HSDPA: Changes the system to HSDPA. The W06 Option is required.

CDMA2000>>: Displays the softkey menu 4 to select system of cdma2000.

Cancel: Cancels selecting system and returns to the softkey menu 2.

Softkey Menu 4

MC-1x: Changes the system to cdma2000 Mc-1x. The C00 Option and C01 Option are required.

1xEV-DO: Changes the system to cdma2000 1xEV-DO. The C00 Option, C01 Option and C02 Option are required.

Cancel: Cancels selecting system and returns to the softkey menu 3.

Screen Field

The description of the input fields in the Measurement Results screen field are listed in Table 5-23. Set the input fields accordingly to execute a new test.

Table 5-23 [Manual Test] Measurement Result Screen Input Field

Input Field	Description
Measurement item selection	Sets whether or not to execute a group of measurement items or each measurement item as follows. • TX Power • Frequency Error • EVM, Origin Offset • BER • Selects "On" or "Off". • On: Executes the measurement item. • Off: Skips the measurement item. Refer to Table 5-17, “Description of Manual Test Measurement Items,” on page 5-60 for details of measurement items.
Procedure	Displays a list of parameter file names stored in the Tester for selection if the Tester contains parameter files. Select a file to recall for a test. If the Tester is using a parameter file, the file name is shown in this field.

Table 5-23 [Manual Test] Measurement Result Screen Input Field

Input Field	Description
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1:9600 to 9900 (1920.0 MHz to 1980.0 MHz) • Band 2: 9250 to 9550 (1850.0 MHz to 1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz) • Band 3: 8550 to 8925 (1710.0 MHz to 1785.0 MHz) • Band 4: 8550 to 8775 (1710.0 MHz to 1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz) • Band 5: 4120 to 4245 (824.0 MHz to 849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837(837.5 MHz), 862 (842.5 MHz) • Band 6: 4150 to 4200 (830.0 MHz to 840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz)
BS Level †	Sets a RF output level of the Tester. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps.
BS Call	Selects "AMR" or "RMC" for BS Call in execution.
PWR CNTL	Sets the power control level of the mobile phone to "HOLD", "CNT UP", or "CNT DWN" and also sets a control value. • HOLD: Sets HOLD • CNT UP: Increases the power continuously. • CNT DWN: Decreases the power continuously. Set TPC Algorithm at "TPC Algorithm" field on the [Configuration: Test Condition] screen. The allowable range for the control value is from 1 dB to 99 dB in 1 dB step.
Caller ID	Sets if the Tester displays an addresser number on the screen or not. • On: Displays the number • Off: Not display the number

Table 5-23 [Manual Test] Measurement Result Screen Input Field

Input Field	Description
Averaging	Averages respective measurement values of Frequency Error and EVM. Set the averaging number from 2 to 99 or "Off". When this function is not required, select "Off".
BER Frames †	Sets the number of test frames for BER measurement. The allowable range is from 1 to 4100 in 1 step. (1 Frame = 1 TTI) Also, a bit number according to BER Frames is displayed between parentheses. The bit number is calculated by an equation "BER Frames multiplied by 244". While BER Frames is entered, The bit number is displayed in conjunction with the value of BER Frames.
CPICH RSCP	Sets whether or not to display the value of CPICH RSCP reported from the mobile phone. Select "On" or "Off". • On: Displays CPICH RSCP and also activates the Measurement CPICH RSCP softkey in connection status. • Off: Not displays CPICH RSCP. If this is set to "On" in the Stand-by status, the value of CPICH RSCP is reported from the mobile phone and displayed on screen after MS or BS Call is started.

† The changing magnification softkey is activated. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

The information from the mobile phone and the tester, as shown in Table 5-24, is displayed at the lower left corner in the screen field.

Table 5-24 [Manual Test] Measurement Result Screen Mobile Phone Information

Item Information	Description
IMSI	Displays the International Mobile Subscriber Identity received from the mobile phone.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
Caller ID	Displays addresser number sent from the tester at BS Call execution.
Dialed No.	Displays the dialed number received from the mobile phone at MS call execution.
PRACH Power	Displays PRACH Power transmitted from the mobile phone.
CPICH RSCP	Displays CPICH received code power reported from the mobile phone.

The following are also displayed on the screen field:

- 3GPP-SYS and SIG-PTN
  The 3GPP system and the signaling pattern that are currently set on the Configuration: Test Condition screen are displayed at the lower-right corner of the screen.
- RF On indicator
  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the tester is output to the RF In/Out connector.

Message Field

The following message is displayed in the message field on the Measurement Result screens:

"Press [Location Update], [BS Call] or dial and call from the mobile."

The words surrounded by [ ] in the above message field denotes the softkey.

SMS Screen

When the **SMS** softkey is pressed on the Manual Test: Stand-by screen after completion of location update, the SMS screen as Figure 5-38 is displayed.

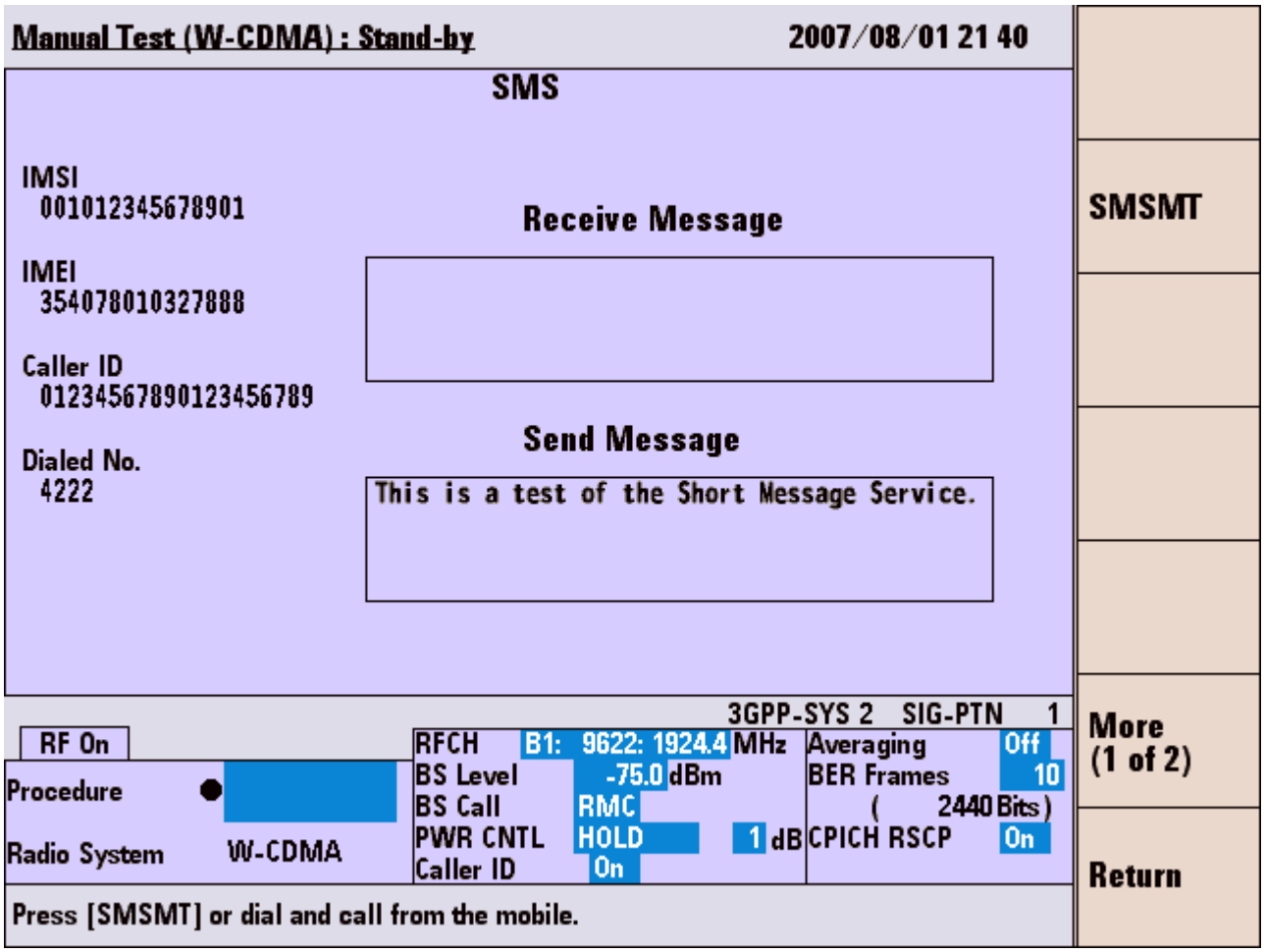


Figure 5-38 [Manual Test: Stand-by] SMS Screen

Softkey Menu Field

Softkey Menu 1

SMSMT: Transmits a message from the Tester. The number of sendable characters is up to 160 characters. (ASCII)

More (1 of 2): Displays the softkey menu 2.

Return: Returns to the [Stand-by] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

More (2 of 2): Returns to the softkey menu 1.

Screen Field

The description of the input fields in the SMS screen field are listed in Table 5-25. Set the input fields accordingly to execute a new test.

Table 5-25 [Manual Test] SMS Screen Input Field

Input Field	Description
Procedure	Displays a list of parameter file names stored in the Tester for selection if the Tester contains parameter files. Select a file to recall parameters for a test. If the Tester is using a parameter file, the file name is shown in this field.

Table 5-25 [Manual Test] SMS Screen Input Field

Input Field	Description
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1:9600 to 9900 (1920.0 MHz to 1980.0 MHz) • Band 2:9250 to 9550 (1850.0 MHz to 1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz) • Band 3:8550 to 8925 (1710.0 MHz to 1785.0 MHz) • Band 4:8550 to 8775 (1710.0 MHz to 1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz) • Band 5:4120 to 4245 (824.0 MHz to 849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837 (837.5 MHz), 862 (842.5 MHz) • Band 6:4150 to 4200 (830.0 MHz to 840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz)
BS Level †	Sets a RF output level of the Tester. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps. BS Call Selects "AMR" or "RMC" for BS Call in execution. PWR CNTL Sets the power control level of the mobile phone to "HOLD", "CNT UP", or "CNT DWN" and also sets a control value. • HOLD: Sets HOLD • CNT UP: Increases the power continuously. • CNT DWN: Decreases the power continuously. Set TPC Algorithm at "TPC Algorithm" field on the [Configuration: Test Condition] screen. The allowable range for the control value is from 1 dB to 99 dB in 1 dB step.

Table 5-25 [Manual Test] SMS Screen Input Field

Input Field	Description
Caller ID	Sets if the Tester displays an addresser number on the screen or not. • On: Displays the number • Off: Not display the number To change the Caller ID, remote control application (provided by user) is required.
Averaging	Averages respective measurement values of Frequency Error and EVM. Set the averaging number from 2 to 99 or "Off". When this function is not required, select "Off".
BER Frames a	Sets the number of test frames for BER measurement. The allowable range is from 1 to 4100 in 1 step. (1 Frame = 1 TTI) Also, a bit number according to BER Frames is displayed between parentheses. The bit number is calculated by an equation "BER Frames multiplied by 244". While BER Frames is entered, The bit number is displayed in conjunction with the value of BER Frames.
CPICH RSCP	Sets whether or not to make the mobile phone report the value of CPICH RSCP. Select "On" or "Off". • On: The value of CPICH RSCP is reported and also the Measurement CPICH RSCP softkey is activated in the connection status. • Off: The value of CPICH RSCP is not reported. If this is set to "On" in the Stand-by status, the value of CPICH RSCP is reported once after MS or BS call is started and displayed on screen.

† The changing magnification softkey is activated. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

The information from the mobile phone and the tester, as shown in Table 5-26, is displayed at the lower left corner in the screen field.

Table 5-26 [Manual Test] SMS Information

Item Information	Description
IMSI	Displays the default value of International Mobile Subscriber Identity received from the mobile phone.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
Caller ID	Displays addresser number sent from the Tester at BS Call execution.
Dialed No.	Displays the dialed number received from the mobile phone at MS call execution.

Table 5-26 [Manual Test] SMS Information

Item Information	Description
Receive Message	Displays the short message received from the mobile phone. The number of sendable character is up to 160 characters. (text data) If the message is binary data, "Binary Data" is displayed.
Send Message	Displays the message sent to the mobile phone. The number of sendable character is up to 160 characters. (text data) If the message is binary data, "Binary Data" is displayed.

NOTE Remote Control application is required to change the SMS send data

The following are also displayed on the screen field:

- 3GPP-SYS and SIG-PTN
  The 3GPP system and the signaling pattern that are currently set on the Configuration: Test Condition screen are displayed at the lower-right corner of the screen.
- RF On indicator
  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the tester is output to the RF In/Out connector.

Message Field

The following message is displayed in the message field:

"Press [SMSMT] or dial and call from the mobile."

The word surrounded by [ ] in the above message field denotes softkey.

Explanation

Execute the SMS test according to the following procedure:

SMS-MT

1. Press the **SMSMT** softkey to send a message in the "Send Message" field.
2. The screen in SMS-MT or SMS-MO execution is displayed as Figure 5-39.
3. The short message is displayed on the mobile phone and the screen returns to the Stand-by screen.

SMS-MO

1. Send a short message from the mobile phone.
2. The screen in SMS-MT or SMS-MO execution is displayed as Figure 5-39.
3. The received message is displayed in the "Received Message" field, and the screen returns to the Stand-by screen.

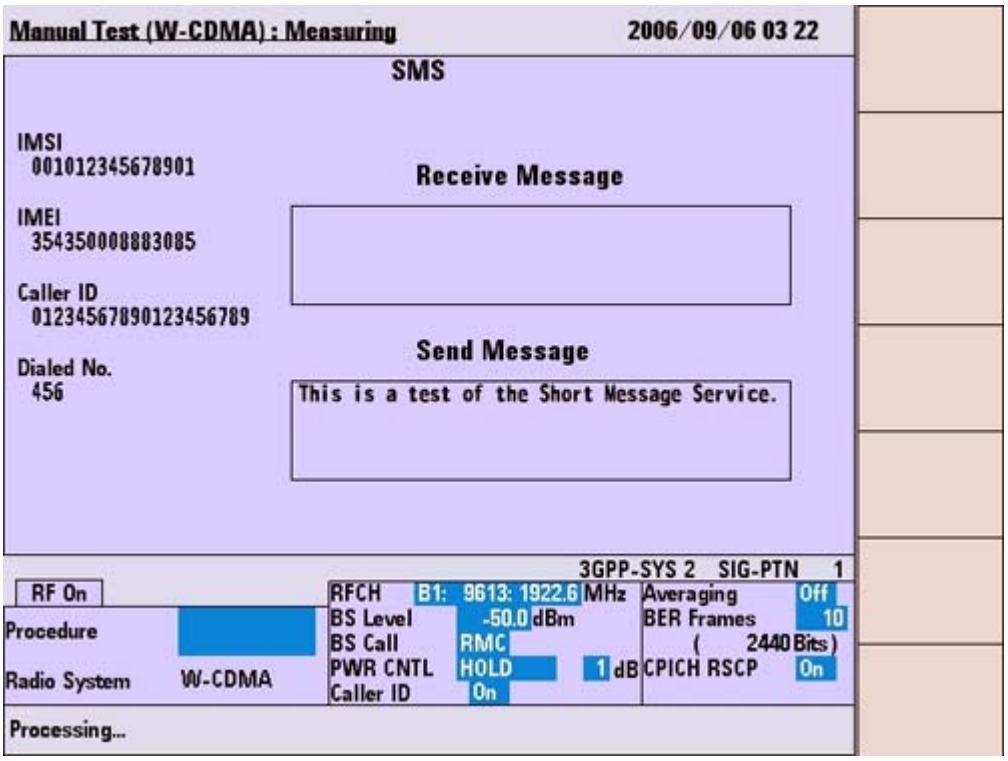


Figure 5-39 [Manual Test: Measuring] Screen in SMS-MT or SMS-MO Execution

HSDPA Screen

NOTE Install the Option W06 when using the HSDPA function.

RF Test in Manual Test

Table 5-27 describes measurement items of RF test in Manual Test. The limit for measurement items can be set on the Configuration: Test Condition screen. Refer to Table 5-50, "[Configuration: Test Condition] Screen Test Limits," on page 5-164.

Table 5-27 Manual Test Measurement Item

Measurement Item	Description
Throughput R	Measures the throughput R. Refer to the Table 5-34 for calculation method.
Median CQI	Measures Median CQI.
CQI variance	Measures CQI rate within Median CQI+/-2. Refer to the Table 5-34 for calculation method.
BLER	Measures BLER. Refer to the Table 5-34 for calculation method.

Stand-by Screen

When the **Manual Test** softkey is pressed on the Initial screen, the Manual Test: Stand-by screen is displayed. When using the system other than HSDPA, press **More (1 of 2)**, **System >>** and then **W-CDMA** to switch the system.

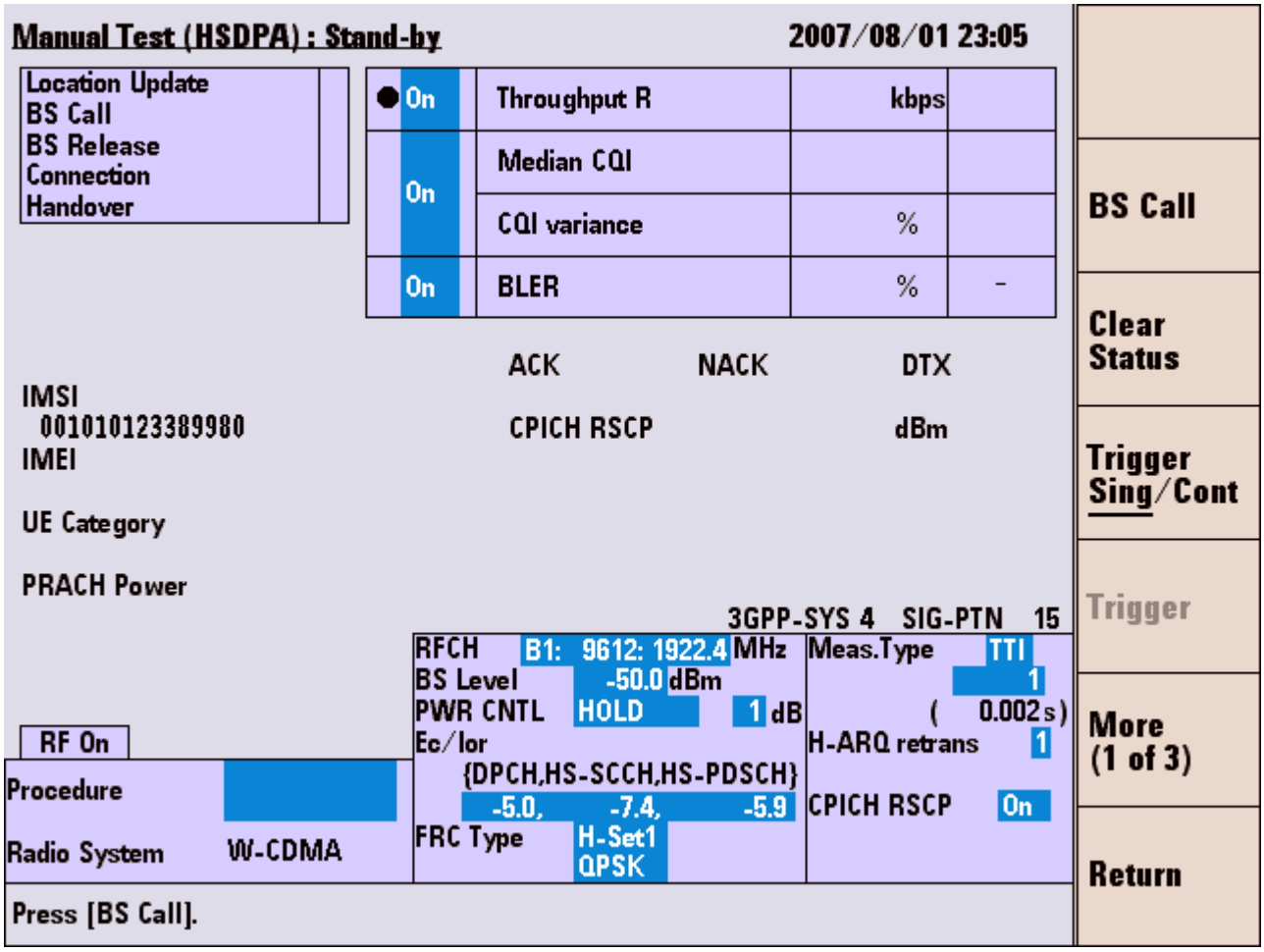


Figure 5-40 [Manual Test: Stand-by] HSDPA Screen

Softkey Menu Field

Softkey Menu 1

BS Call: Executes BS Call.

Clear Status: Clears Pass/Fail measurement results at signaling steps in the test flow.

Trigger Sing/Cont: Selects the trigger mode from "Sing"(single) and "Cont"(continuous).

- The "Sing" mode setting provides single measurement of RF Test.
- The "Cont" mode setting provides continuous measurement of RF Test.

Trigger: This softkey is inactivated on the [stand-by] screen. This softkey is activated in the Connection status to start measurement.

More(1 of 2): Displays the softkey menu 2.

Return: Returns to the [Initial] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves a screen image in the USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

RF Output On/Off: Selects the RF power output from "On" and "Off". When it is set to "On", it is set to the value of BS Level. When it is set to "OFF", the value is set below -120 dBm.

System >>: Displays softkey menu 3 to select system.

More (2 of 2): Returns to the softkey menu1.

Softkey Menu 3

GSM: Changes the system to GSM. The G00 Option is required.

GPRS: Changes the system to GPRS. The G00 Option is required.

EGPRS: Changes the system to EGPRS. The G03 Option is required.

W-CDMA: Changes the system to W-CDMA.

HSDPA: This softkey is unavailable.

CDMA2000>>: Displays the softkey menu 4 to select system of cdma2000.

Cancel: Cancels selecting system and returns to the softkey menu 2.

Softkey Menu 4

MC-1x: Changes the system to cdma2000 Mc-1x. The C00 Option and C01 Option are required.

1xEV-DO: Changes the system to cdma2000 1xEV-DO. The C00 Option, C01 Option and C02 Option are required.

Cancel: Cancels selecting system and returns to the softkey menu 3.

Screen Field

Set the input fields in the screen field according to the following description of Table 5-28 to execute a new test.

Table 5-28 [Manual Test: Stand-by] Screen Input Field

Input Field	Description
Measurement item selection	Sets whether or not to execute a group of measurement items or each measurement item as follow. • Throughput R • Median CQI, CQI variance • BLER Selects "On" or "Off". • On: Executes the measurement item. • Off: Skips the measurement item. Refer to Table 5-34 for details of measurement items.
Procedure	Displays a list of parameter file names stored in the Tester for selection if the Tester contains parameter files. Select a file to recall for a test. If the Tester is using a parameter file, the file name is shown in this field.

Table 5-28 [Manual Test: Stand-by] Screen Input Field

Input Field	Description
RFCH †	Sets the FRC type and each Modulation Type that can be set. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1:9600 to 9900 (1920.0 MHz to 1980.0 MHz) • Band 2: 9250 to 9550 (1850.0 MHz to 1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz) • Band 3: 8550 to 8925 (1710.0 MHz to 1785.0 MHz) • Band 4: 8550 to 8775 (1710.0 MHz to 1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz) • Band 5: 4120 to 4245 (824.0 MHz to 849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837 (837.5 MHz), 862 (842.5 MHz) • Band 6: 4150 to 4200 (830.0 MHz to 840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz)
BS Level †	Sets a RF output level of the Tester. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB step.
PWR CNTL	Sets the power control level of the mobile phone to "HOLD", "CNT UP", or "CNT DWN" and also set a control value. • HOLD: Sets HOLD. • CNT UP: Increases the power control value continuously. • CNT DWN: Decrease the power control value continuously. Set TPC Algorithm at "TPC Algorithm" on the [Configuration: Test Condition] screen. The allowable range for the control value is from 1 dB to 99 dB in 1 dB step.

Table 5-28 [Manual Test: Stand-by] Screen Input Field

Input Field	Description
Ec/Ior	Sets the code power of the DPCH, HS-SCCH, HS-PDSCH by fixed combination. The available combination is defined by the combination of the FRC Type, Modulation Type, and UE Category. The HS-PDSCH code power stated above is the total amount of HS-PDSCH code power of each Channlisation Code. Refer to Table 5-29.
FRC Type	Sets the Modulation Type of FRC Type and each Type that can be set. Allowable range is as follows: FRC type: H-set1 to 5, CQI1 to 30. Modulation Type: QPSK, 16QAM. QPSK and 16QAM: Varied according to the combination of FRC type and UE Category. Refer to Table 5-29.
Meas. Type †	Sets measurement period mode and measurement period number. Measurement period mode is selected from TTI and CQI. Allowable range of measurement period number is from 1 to 100000 in 1 step. • TTI Measurement period is defined by the TTI period shown by the measurement period number. The parenthesized value is calculated by "measurement period number * 2ms". • CQI Measurement period is defined by how long it takes before attaining the CQI reporting value shown by the measurement period number.
H-ARQ retrans	Sets the time of retransmission of H-ARQ. Select 1 or 4.
UE Category	Sets UE Category. Allowable range is from 1 to 6, 11, and 12. The setting range of Modulation Type of FRC Type and Ec/Ior are varied by the combination of FRC Type and UE Category. Refer to Table 5-29.
CPICH RSCP	Sets whether or not to display the CPICH RSCP value reported by a mobile phone. Select "On" or "Off". • On: Displays the CPICH RSCP value. Activates the Measurement CPICH RSCP softkey in the Connection status. • Off: Not display the CPICH RSCP value. When it is set to "On" in the [Stand-by] status and MS or BS call is started, CPICH RSCP is reported once and displayed on the screen.

Table 5-29 Ec/Ior Setting Combination

Combination of FRC Type, Modulation Type, and UE Category			Ec/Ior Settings (dB)
FRC Type	**Modulation Type**	**UE Category**	**{DPCH, HS-SCCH, HS-PDSCH}**
H-Set1 H-Set2 H-Set3	QPSK or 16QAM	—	{–5.0, –7.4, –5.9}, {–5.0, –8.4, –5.9}, {–8.4, –8.4, –2.9}, {–13.0, –13.0, –3.0} {–13.0, –13.0, –3.0} is valid when FRC Type is set to H-Set1 and Modulation Type is set to 16QAM.
H-Set4 H-Set5	QPSK	—	{–5.0, –7.4, –5.9}, {–5.0, –8.4, –5.9}, {–8.4, –8.4, –2.9}
CQI-1 to CQI-15	QPSK	1 to 6,11,12	{–10.0, –10.0, –3.0}
CQI-16 to CQI-22	16QAM	1 to 6	{–10.0, –10.0, –3.0}
CQI-23	16QAM	1 to 6	{–10.0, –10.0, –4.0}
CQI-24	16QAM	1 to 6	{–10.0, –10.0, –5.0}
CQI-25	16QAM	1 to 6	{–10.0, –10.0, –6.0}
CQI-26	16QAM	1 to 6	{–10.0, –10.0, –7.0}
CQI-27	16QAM	1 to 6	{–10.0, –10.0, –8.0}
CQI-28	16QAM	1 to 6	{–10.0, –10.0, –9.0}
CQI-29	16QAM	1 to 6	{–10.0, –10.0, –10.0}
CQI-30	16QAM	1 to 6	{–10.0, –10.0, –11.0}
CQI-16	QPSK	11,12	{–10.0, –10.0, –4.0}
CQI-17	QPSK	11,12	{–10.0, –10.0, –5.0}
CQI-18	QPSK	11,12	{–10.0, –10.0, –6.0}
CQI-19	QPSK	11,12	{–10.0, –10.0, –7.0}
CQI-20	QPSK	11,12	{–10.0, –10.0, –8.0}
CQI-21	QPSK	11,12	{–10.0, –10.0, –9.0}
CQI-22	QPSK	11,12	{–10.0, –10.0, –10.0}
CQI-23	QPSK	11,12	{–10.0, –10.0, –11.0}
CQI-24	QPSK	11,12	{–10.0, –10.0, –12.0}
CQI-25	QPSK	11,12	{–10.0, –10.0, –13.0}

Table 5-29 Ec/Ior Setting Combination

Combination of FRC Type, Modulation Type, and UE Category			Ec/Ior Settings (dB)
FRC Type	**Modulation Type**	**UE Category**	**{DPCH, HS-SCCH, HS-PDSCH}**
CQI-26	QPSK	11,12	{–10.0, –10.0, –14.0}
CQI-27	QPSK	11,12	{–10.0, –10.0, –15.0}
CQI-28	QPSK	11,12	{–10.0, –10.0, –16.0}
CQI-29	QPSK	11,12	{–10.0, –10.0, –17.0}
CQI-30	QPSK	11,12	{–10.0, –10.0, –18.0}

Refer to Appendix D, "OCNS (HSDPA) for code power ratio of OCNS and common channel except DPCH, HS-SCCH, and HS-PDSCH.

The information from the mobile phone and the Tester as Table 5-30 is displayed in the screen field.

Table 5-30 [Manual Test: Stand-by] Screen Mobile Phone Information

Item Information	Description
IMSI	Displays the International Mobile Subscriber Identity.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
UE Category	Displays UE Category.
PRACH Power	Displays the PRACH power sent from the mobile phone.
ACK	Displays the number of ACK at the end of the measurement.
NACK	Displays the number of NACK at the end of the measurement.
DTX	Displays the number of DTX at the end of the measurement.
CPICH RSCP	Displays the CPICH received code power reported from the mobile phone.

Also, the followings are displayed in the screen field.

- 3GPP-SYS and SIG-PTN

  The 3GPP system and the signaling pattern that are currently set on the [Configuration: Test Condition] screen are displayed at the lower-right corner of the screen.

- RF On indicator

  RF On indicator is displayed at the lower-left corner of the screen only when the RF signal from the Tester is output to the RF In/Out connector.

Message Field

The following message is displayed in the message field in the Measuring screen:

"Press [BS Call]"

The word surrounded by [ ] in the message field denotes the softkey.

Explanation

Location Update can be started by the following way;

- Turn the mobile phone on and then location update starts automatically.

Location Update Screen

When the mobile phone is turned on at the Stand-by screen, location update is started. After completion of location update, the display status returns to Stand-by.

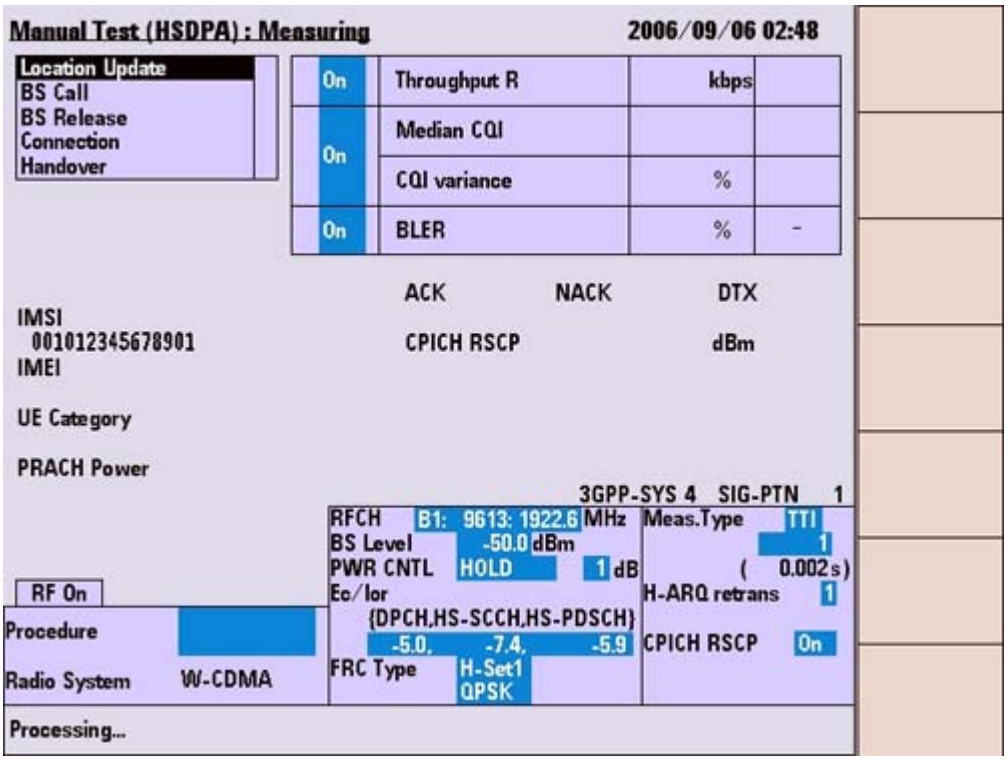


Figure 5-41 [Manual Test: Measuring] Location Update Screen

Screen Field

The input field in the screen field can be changed for a new test. Refer to Table 5-28, "[Manual Test: Stand-by] Screen Input Field," on page 5-100.

When Location Update is completed, the information from the Tester and the mobile phone information is displayed as shown in Table 5-31.

Table 5-31 [Manual Test: Location Update] Screen Mobile Phone Information

Item Information	Description
IMSI	Displays the International Mobile Subscriber Identity.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
UE Category	Displays UE Category.
PRACH Power	Displays the PRACH power sent from the mobile phone.
ACK	Displays the number of ACK at the end of the measurement.
NACK	Displays the number of NACK at the end of the measurement.
DTX	Displays the number of DTX at the end of the measurement.
CPICH RSCP	Displays the CPICH received code power reported from the mobile phone.

Also, the followings are displayed in the screen field.

- 3GPP-SYS and SIG-PTN

  The 3GPP system and the signaling pattern that are currently set on the [Configuration: Test Condition] screen are displayed at the lower-right corner of the screen.

- RF On indicator

  "RF On" indicator is displayed at the lower-left corner of the screen only when the RF signal from the Tester is output to the RF In/Out connector.

Explanation

When location update is passed, "P" is shown on blue background.

After that, press the **BS Call** softkey to continue the test process.

When above procedure is performed, the screen changes to a [Measuring] screen, and the test on the mobile phone starts.

When the **BS Call** softkey is pressed, the "BS Call" step in the test flow is highlighted, and then the following test result is shown in the field right next to the "BS Call" step.

- "P": Shown on blue background when call setup is executed properly and BS Call is passed.
- "F": Shown on red background when BS Call is failed.

Connection Screen

When BS Call is succeeded, the Tester becomes in the Connection status and a [Measuring] Connection screen as Figure 5-42 is displayed.

- When the **Trigger Sing/Cont** softkey is set to "Cont", continuous measurement starts as soon as the [Measuring] Connection screen is displayed.
- When the **Trigger Sing/Cont** softkey is set to "Sing", press the **Trigger** softkey to start single measurement.

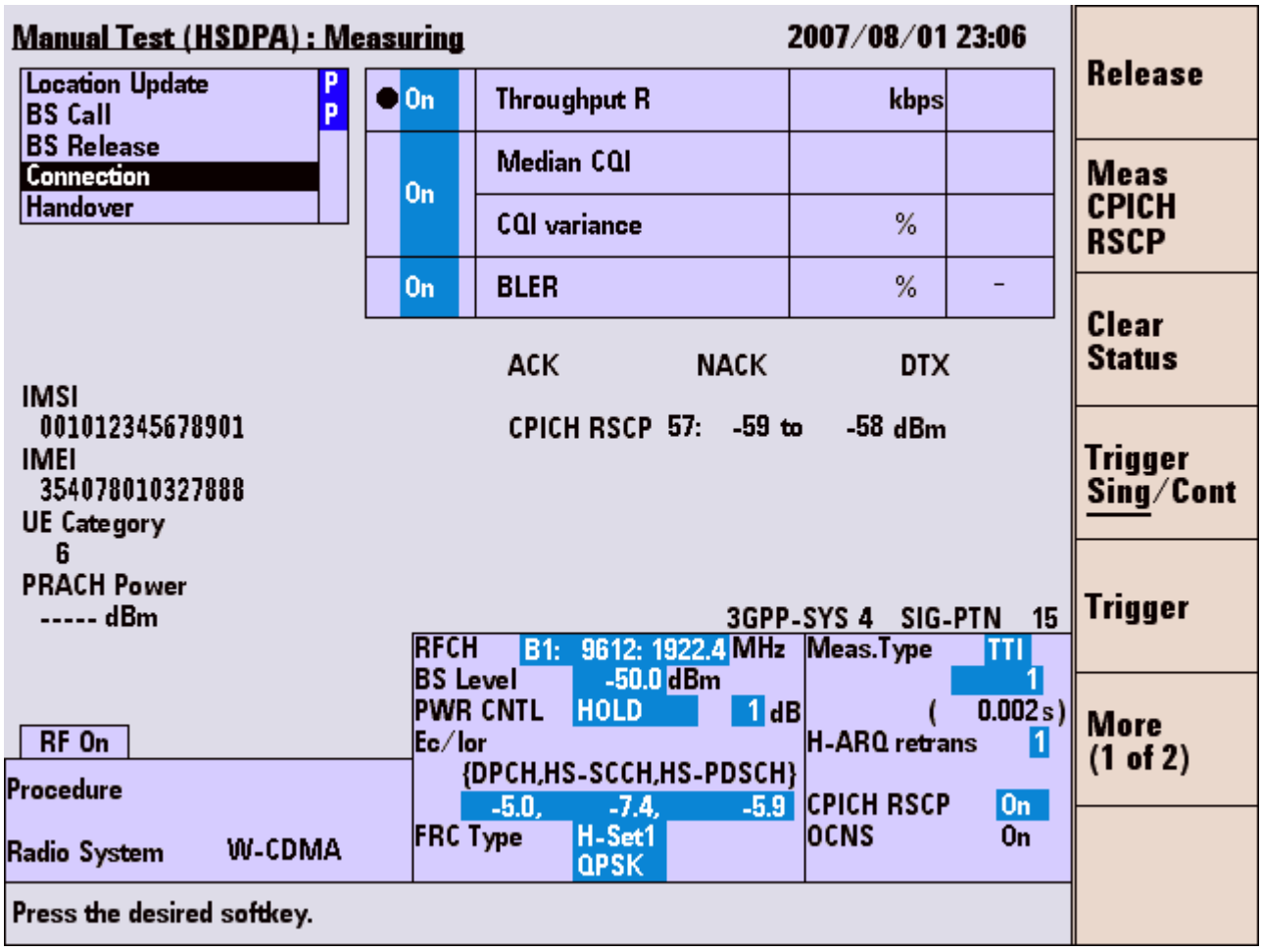


Figure 5-42 [Manual Test: Measuring] Connection Screen

Softkey Menu Field

Softkey Menu 1

Release: Releases the call from the Tester.

Measurement CPICH RSCP: Makes the mobile phone report the value of CPICH RSCP. This softkey is inactivated when the "CPICH RSCP" input field is set to "Off".

Clear Status: Clears Pass/Fail measurement results at signaling steps in the test flow.

Trigger Sing/Cont: Selects the trigger mode from "Sing"(single) and "Cont"(continuous).

- The "Sing" mode setting provides single measurement of RF Test.
- The "Cont" mode setting provides continuous measurement of RF Test.

Trigger: Starts single measurement. Measurement can be executed only at the Connection (FRC) step.

More(1 of 2): Displays the softkey menu 2.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves a screen image in the USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

More (2 of 2): Returns to the softkey menu 1.

Screen Field

Set the input fields in the screen field according to the following description of Table 5-32 to change parameters for current test.

Table 5-32 [Manual Test] Connection Screen Input Field

Input Field	Description
Measurement item selection	Sets whether or not to execute a group of measurement items or each measurement item as follow. • Throughput R • Median CQI, CQI variance • BLER Selects "On" or "Off". • On: Executes the measurement item. • Off: Skips the measurement item. Refer to Table 5-34 for details of measurement items.

Table 5-32 [Manual Test] Connection Screen Input Field

Input Field	Description
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1:9600 to 9900 (1920.0 MHz to 1980.0 MHz) • Band 2: 9250 to 9550 (1850.0 MHz to 1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz) • Band 3: 8550 to 8925 (1710.0 MHz to 1785.0 MHz) • Band 4: 8550 to 8775 (1710.0 MHz to 1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz) • Band 5: 4120 to 4245 (824.0 MHz to 849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837 (837.5 MHz), 862 (842.5 MHz) • Band 6: 4150 to 4200 (830.0 MHz to 840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz)
BS Level †	Sets a RF output level of the Tester. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB step.

Table 5-32 [Manual Test] Connection Screen Input Field

Input Field	Description
PWR CNTL	Sets control for power control level of the mobile phone to "UP", "DOWN", "CNT UP", or "CNT DWN" and also a control value. • HOLD: Sets HOLD. • Up: Increases the power control value in the set control value. • Down: Decreases the power control value in the set control value. • CNT UP: Increases the control value continuously. • CNT DWN: decreases the power control value continuously. The setting is done with the following operations. • When this field is changed from "HOLD" to "UP" or "DOWN", this setting is automatically returned to "HOLD" after completion of this setting. • When this field is set to "CNT UP" or "CNT DWN", the setting is remained after release the call. • When this field is changed from "CNT UP" to "CNT DWN", this setting is remained as "CNT UP" after completion of this setting. (vice versa) Set TPC Algorithm at "TPC Algorithm" field on the [Configuration: Test Condition] screen. The allowable range for the control value is from 1 dB to 99 dB in 1 dB step.
Ec/Ior	Sets the code power of the DPCH, HS-SCCH, HS-PDSCH by fixed combination. The available combination is defined by the combination of the FRC Type, Modulation Type, UE Category. The HS-PDSCH code power stated above is the total amount of HS-PDSCH code power of each Channlisation Code. Refer to Table 5-29.
FRC Type	Sets the FRC Type and each modulation type that can be set. Allowable range is as follows: FRC type: H-set1 to 5, CQI1 to 30. Modulation Type: QPSK, 16QAM. QPSK and 16QAM: Varied according to the combination of FRC type and UE Category. Refer to Table 5-29.
Meas. Type †	Sets measurement period mode and measurement period number. Measurement period mode is selected from TTI and CQI. Allowable range of measurement period number is from 1 to 100000 in 1 step. • TTI Measurement period is defined by the TTI period shown by the measurement period number. The parenthesized value is calculated by "measurement value * 2ms". • CQI Measurement period is defined by how long it takes before attaining the CQI reporting value shown by the measurement period number.
H-ARQ retrans	Sets the time of retransmission of H-ARQ select 1 or 4.
UE Category	Sets UE Category. Allowable range is from 1 to 6, 11, and 12. The setting range of Modulation Type of FRC Type and Ec/Ior are varied by the combination of FRC Type and UE Category. Refer to Table 5-29.

Table 5-32 [Manual Test] Connection Screen Input Field

Input Field	Description
CPICH RSCP	Sets whether or not to display the CPICH RSCP value reported by a mobile phone. Select "On" or "Off". • On: Displays the CPICH RSCP value. Activates the Measurement CPICH RSCP softkey in the Connection status. • Off: Not display the CPICH RSCP value. When it is set to "On" in the [Stand-by] status and MS or BS call is started, CPICH RSCP is reported once and displayed on the screen.
OCNS	Sets the OCNS. The setting is fixed to "ON".

† The changing magnification softkey is activated. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

The information from the mobile phone and the Tester as Table 5-33 is displayed in the screen field.

Table 5-33 [Manual Test] Connection Screen Mobile Phone Information

Item	Description
IMSI	Displays the International Mobile Subscriber Identity.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
UE Category	Displays UE Category.
PRACH Power	Displays the PRACH power sent from the mobile phone.
ACK	Displays the number of ACK at the end of the measurement.
NACK	Displays the number of NACK at the end of the measurement.
DTX	Displays the number of DTX at the end of the measurement.
CPICH RSCP	Displays the CPICH received code power reported from the mobile phone.

Also, the followings are displayed in the screen field.

- 3GPP-SYS and SIG-PTN

The 3GPP system and the signaling pattern that are currently set on the [Configuration: Test Condition] screen are displayed at the lower-right corner of the screen.

- RF On indicator

"RF On" indicator is displayed at the lower-left corner of the screen only when the RF signal from the Tester is output to the RF In/Out connector.

Message Field

The following message is displayed in the message field in the [Measuring] screen:

"Press the desired softkey."

HSDPA Measuring Screen

At the Connection step, RF Test can be executed.

Measurement is started on the Measuring screen as Figure 5-43.

The interim report value for each measurement item is displayed in every 2s until the measurement period set by the Meas. Type (TTI, CQI) ends.

Refer to the Table 5-34 for interim report value of each measurement item.

After the measurement period ends, the measurement result is displayed.

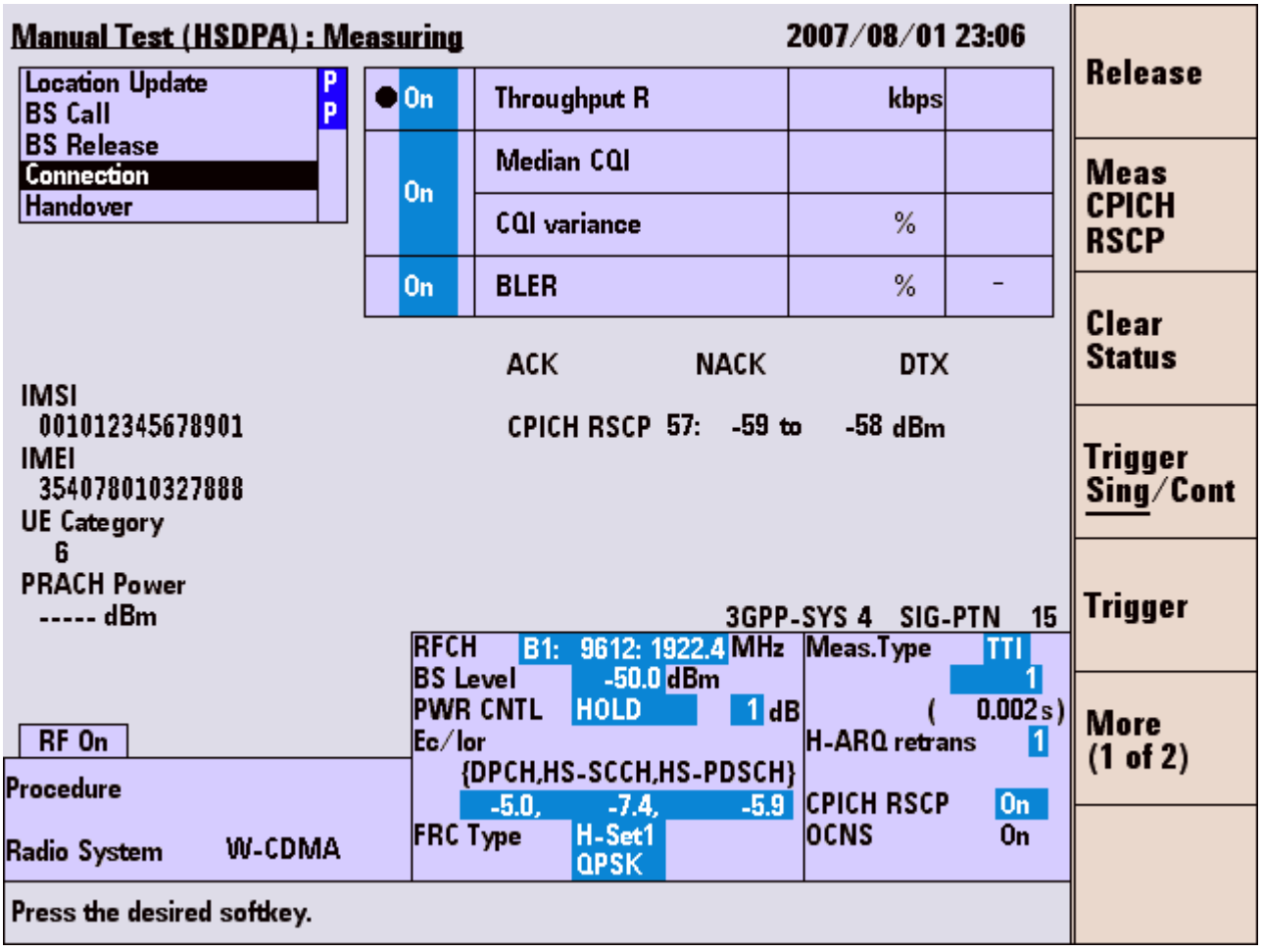


Figure 5-43 [Manual Test: Measuring] Measurement Screen

Softkey Menu Field

Softkey Menu 1

Trigger Sing/Cont: Selects the trigger mode from "Sing"(single) and "Cont"(continuous). This softkey is activated only at Connection step.

- When the trigger mode is changed from "Sing" to "Cont", continuous measurement starts.
- When the trigger mode is changed from "Cont" to "Sing", softkey disappears and while the measurement is aborted.

Message Field

The following message is displayed in the message field in the [Measuring] screen:

"Press the desired softkey."

Table 5-34 Measurement items of HSDPA Manual Test

Measurement Item	Description
Throughput R	Measures the throughput R. It is calculated by the following equation. (at the interim reporting) Throughput (bps) = [TB size] (bit) * [Number of Ack from the beginning to the interim reporting]/[the measurement period from start to interim reporting] (s) (at the end of measurement) Throughput (bps) = [TB size] (bit) * [Number of Ack during measurement]/[the entire measurement period] (s)
Median CQI	(at the interim reporting) Measures the Median CQI from the beginning to the interim reporting. (at the end of measurement) Measures the Median CQI for the entire measurement period.

Table 5-34 Measurement items of HSDPA Manual Test

Measurement Item	Description
CQI variance	Calculate the rate of CQI within Median CQI +/-2 It is calculated by the following equation. (at the interim reporting) • TTI CQI variance = [CQI that is within +/-2 of the Median CQI from the beginning to the interim reporting]/[CQI + DTX from the beginning to the interim reporting] • CQI CQI variance = [CQI that is within +/-2 of the Median CQI from the beginning to the interim reporting]/[CQI from the beginning to the interim reporting] (at the end of measurement) • TTI CQI variance = [CQI that is within +/-2 of the Median CQI during TTI period]/[CQI +DTX during TTI period] • CQI CQI variance = [Median CQI within the reported number of CQI+/-2]/[reported number of CQI] dian CQI within the reported number of CQI+/-2]/[reported number of CQI]
BLER	Measures BLER. It is calculated by the following equation. BLER = ([NACK number] + [DTX number])/([ACK number] + [NACK number] + [DTX number]) The "number" implies the number from the beginning to the interim reporting at the interim reporting, and the number of the entire measurement period at the end of the measurement.

The information from the mobile phone and the Tester as Table 5-35 is displayed.

Table 5-35 [Manual Test] Connection Screen Mobile Phone Information

Item	Description
IMSI	Displays the International Mobile Subscriber Identity.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
UE Category	Displays UE Category.
PRACH Power	Displays the PRACH power sent from the mobile phone.
ACK	Displays the number of ACK from the beginning to the interim reporting or the end of the measurement.
NACK	Displays the number of NACK from the beginning to the interim reporting or the end of the measurement.
DTX	Displays the number of DTX from the beginning to the interim reporting or the end of the measurement.
CPICH RSCP	Displays the CPICH received code power reported from the mobile phone.

CPICH RSCP Screen

When the **Measurement CPICH RSCP** softkey is pressed at the Connection step, the Tester gets the mobile phone report the value of CPICH RSCP.

When the "CPICH RSCP" input field is set to "ON", the CPICH RSCP report is enabled.

After informing the CPICH RSCP report once, the Tester shows the value.

Figure 5-44 shows the CPICH RSCP screen during reporting.

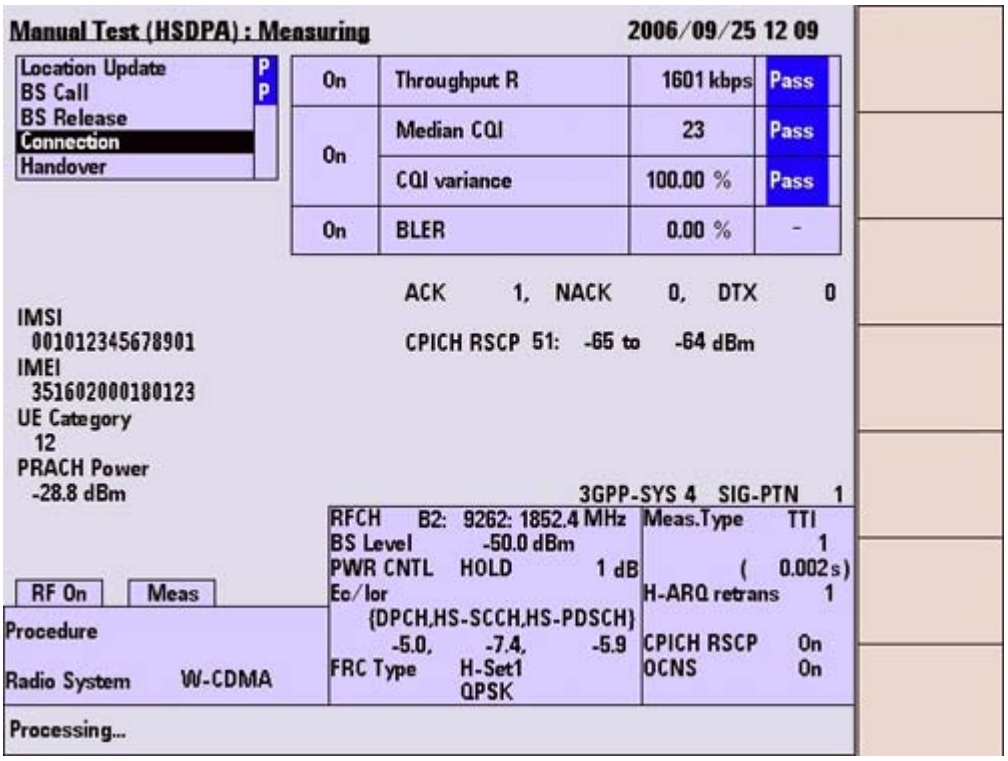


Figure 5-44 [Measuring] CPICH RSCP Screen

Message Field

The following message is displayed in the message field in the [Measuring] screen:

"Processing..."

Measurement Result Screen

When measurement is completed, a [Measuring] Measurement Result screen is displayed.

To end the test in BS Call connection, press the **Release** softkey to disconnect from the Tester. When the disconnection is completed, a [Stand-by] Measurement Result screen is displayed.

Pass is shown on blue background when the measurement result is passed. Or, **Fail** is shown on red background when the measurement result is failed.

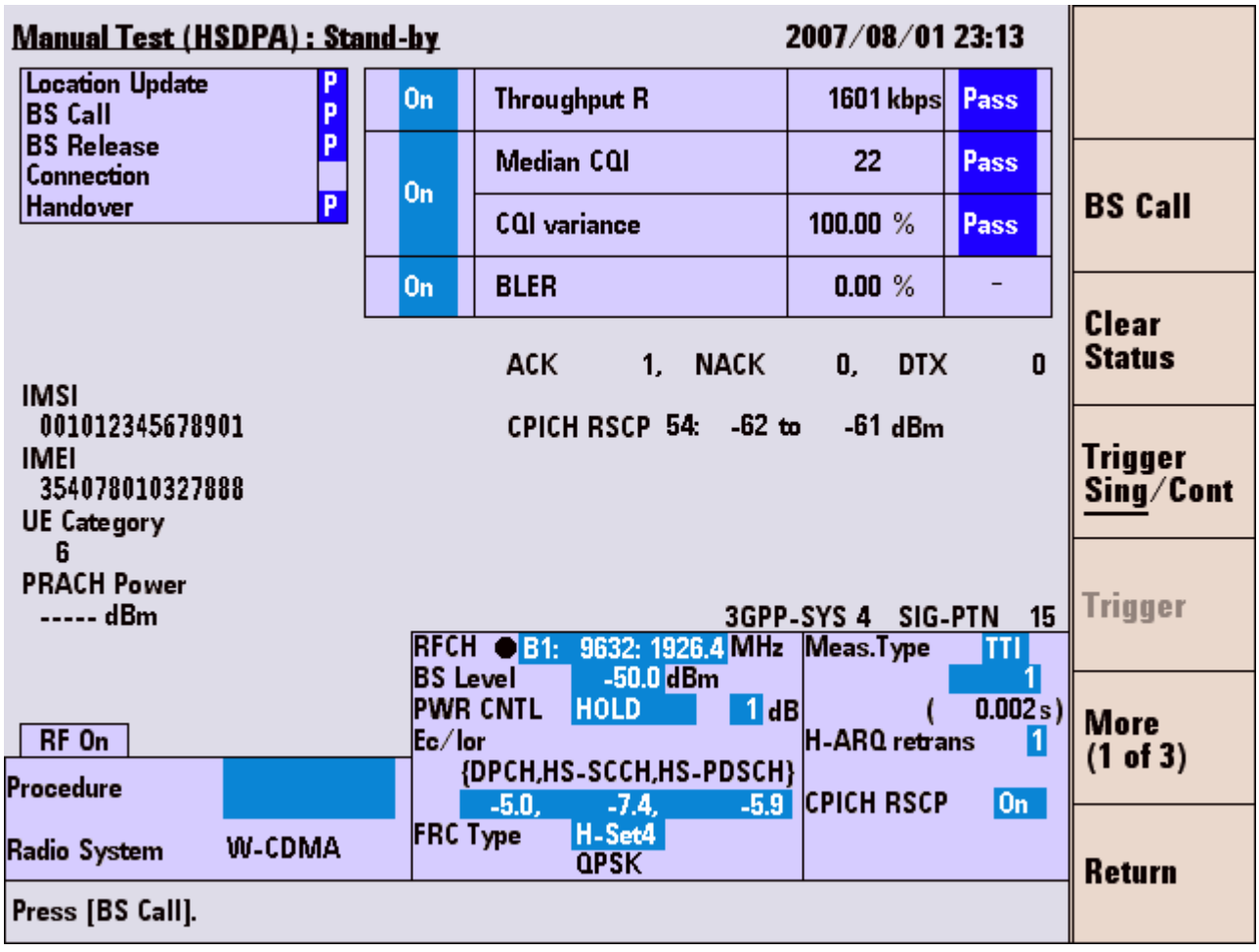


Figure 5-45 [Stand-by] Measurement Result Screen

Softkey Menu Field

Softkey Menu 1

BS Call: Executes BS Call.

Clear Status: Clears Pass/Fail measurement results at signaling steps in the test flow.

Trigger Sing/Cont: Selects the trigger mode from "Sing"(single) and "Cont"(continuous).

- The "Sing" mode setting provides single measurement of RF Test.
- The "Cont" mode setting provides continuous measurement of RF Test.

Trigger: This softkey is inactivated on the [stand-by] screen. This softkey is activated in the Connection status to start measurement.

More (1 of 2): Displays the softkey menu 2.

Return: Returns to the [Initial] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves a screen image in the USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

RF Output On/Off: Selects the RF power output from "On" and "Off". When it is set to "On", it is set to the value of BS Level. When it is set to "OFF", the value is set below -120 dBm.

System>>: Displays softkey menu 3 to select system.

More (2 of 2): Returns to the softkey menu1.

Softkey Menu 3

GSM: Changes the system to GSM. The G00 Option is required.

GPRS: Changes the system to GPRS. The G00 Option is required.

EGPRS: Changes the system to EGPRS. The G00 Option and G03 Option are required.

W-CDMA: Changes the system to W-CDMA.

HSDPA: This softkey is unavailable.

CDMA2000>>: Displays the softkey menu 4 to select system of cdma2000.

Cancel: Cancels selecting system and returns to the softkey menu 2.

Softkey Menu 4

MC-1x: Changes the system to cdma2000 Mc-1x. The C00 Option and C01 Option are required.

1xEV-DO: Changes the system to cdma2000 1xEV-DO. The C00 Option, C01 Option and C02 Option are required.

Cancel: Cancels selecting system and returns to the softkey menu 3.

Screen Field

Set the input fields in the screen field according to the following description of Table 5-36 to execute a new test.

Table 5-36 [Manual Test] Measurement Result Screen Input Field

Input Field	Description
Measurement item selection	Sets whether or not to execute a group of measurement items or each measurement item as follow. • Throughput R • Median CQI, CQI variance • BLER Selects "On" or "Off". • On: Executes the measurement item. • Off: Skips the measurement item. Refer to Table 5-34 for details of measurement items.
Procedure	Displays a list of parameter file names stored in the Tester for selection if the Tester contains parameter files. Select a file to recall for a test. If the Tester is using a parameter file, the file name is shown in this field.

Table 5-36 [Manual Test] Measurement Result Screen Input Field

Input Field	Description
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1:9600 to 9900 (1920.0 MHz to 1980.0 MHz) • Band 2: 9250 to 9550 (1850.0 MHz to 1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz) • Band 3: 8550 to 8925 (1710.0 MHz to 1785.0 MHz) • Band 4: 8550 to 8775 (1710.0 MHz to 1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz) • Band 5: 4120 to 4245 (824.0 MHz to 849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837 (837.5 MHz), 862 (842.5 MHz) • Band 6: 4150 to 4200 (830.0 MHz to 840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz)
BS Level †	Sets a RF output level of the Tester. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB step.
PWR CNTL	Sets the power control level of the mobile phone to "HOLD", "CNT UP", or "CNT DWN" and also set a control value. • HOLD: Sets HOLD. • CNT UP: Increases the power control value continuously. • CNT DWN: Decrease the power control value continuously. Set TPC Algorithm at "TPC Algorithm" on the [Configuration: Test Condition] screen. The allowable range for the control value is from 1 dB to 99 dB in 1 dB step.

Table 5-36 [Manual Test] Measurement Result Screen Input Field

Input Field	Description
Ec/Ior	Sets the code power of the DPCH, HS-SCCH, HS-PDSCH by fixed combination. The available combination is defined by the combination of the FRC Type, Modulation Type, UE Category. The HS-PDSCH code power stated above is the total amount of HS-PDSCH code power of each Channlisation Code. Refer to Table 5-29.
FRC Type	Sets the FRC type and each Modulation type that can be set. Allowable range is as follows: FRC type: H-set1 to 5, CQI1 to 30. Modulation Type: QPSK, 16QAM. QPSK and 16QAM: Varied according to the combination of FRC type and UE Category. Refer to Table 5-29.
Meas. Type †	Sets measurement period mode and measurement period number. Measurement period mode is selected from TTI and CQI. Allowable range of measurement period number is from 1 to 100000 in 1 step. • TTI Measurement period is defined by the TTI period shown by the measurement value. The parenthesized value is calculated by "measurement period number * 2ms". • CQI Measurement period is defined by how long it takes before attaining the CQI reporting value shown by the measurement period number.
H-ARQ retrans	Sets the time of retransmission of H-ARQ. Select 1 or 4.
UE Category	Sets UE Category. Allowable range is from 1 to 6, 11, and 12. The setting range of Modulation Type of FRC Type and Ec/Ior are varied by the combination of FRC Type and UE Category. Refer to Table 5-29.
CPICH RSCP	Sets whether or not to display the CPICH RSCP value reported by a mobile phone. Select "On" or "Off". • On: Displays the CPICH RSCP value. Activates the Measurement **CPICH RSCP** softkey in the Connection status. • Off: Not display the CPICH RSCP value. When it is set to "On" in the [Stand-by] status and MS or BS call is started, CPICH RSCP is reported once and displayed on the screen.

† The changing magnification softkey is activated. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

The information from the mobile phone and the Tester as Table 5-37 is displayed.

Table 5-37 [Manual Test] Mobile Phone Information

Item	Description
IMSI	Displays the International Mobile Subscriber Identity.
IMEI	Displays the International Mobile Station Equipment Identity received from the mobile phone.
UE Category	Displays UE Category.
PRACH Power	Displays the PRACH power sent from the mobile phone.
ACK	Displays the number of ACK from the beginning to the interim reporting or the end of the measurement.
NACK	Displays the number of NACK frm the beginning to the interim reporting or the end of the measurement.
DTX	Displays the number of DTX from the beginning to the interim reporting or the end of the measurement.
CPICH RSCP	Displays the CPICH received code power reported from the mobile phone.

Also, the followings are displayed in the screen field.

- 3GPP-SYS and SIG-PTN

  The 3GPP system and the signaling pattern that are currently set on the Configuration: Test Condition screen are displayed at the lower-right corner of the screen.

- RF On indicator

  RF On indicator is displayed at the lower-left corner of the screen only when the RF signal from the Tester is output to the RF In/Out connector.

Message Field

The following message is displayed in the message field in the Measuring screen:

"Press [BS Call]"

The word surrounded by [ ] in the message field denotes the softkey.

TX Analyzer

Overview

Feature of TX Analyzer

RF characteristic of the mobile phone is measured without signaling processes.

Setting of Downlink Signal

Setting of "RF ON/OFF", "BS Level" and "Modulation" works with those on the Signal Generator screen.

TX Analyzer Settings in the Configuration Mode

Each test item can be measured and analyzed with the test limits specified on the Configuration: Test Condition screen.

RF Test in TX Analyzer

Standard

Table 5-38 describes measurement items of RF test in the TX Analyzer test for the Tester which is not equipped with the Option W07 and Option W09.

Table 5-38 TX Analyzer Measurement Item (Standard)

Measurement Item	Description
TX Power	Measures TX power.
Frequency Error	Measures frequency error.
EVM	Measures error vector magnitude.
Origin Offset	Measures origin offset.

NOTE

Refer to "Physical Channel Parameters of Signal Generator" on page D-2 about the parameters of physical channel transmitting in the Signal Generator mode and receiving in the TX Analyzer mode.

For numeric value entry, the changing magnification softkey menu is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

The default state is the last setting stored in the internal memory of the Tester before power off.

ACLR/OBW Option Installed

NOTE

Install the Option W07 when using the ACLR/OBW function.

Table 5-39 describes measurement items of RF test in the TX Analyzer test specified for the Tester which is equipped with the Option W07. Refer to Table 5-39 for the remaining measurement items.

Table 5-39 TX Analyzer Measurement Item (with Option W07)

Measurement Item	Description
ACLR DSB 5 MHz	Measures the sum of adjacent channel leakage power at -5 MHz and +5 MHz.
ACLR DSB 10 MHz	Measures the sum of adjacent channel leakage power at -10 MHz and +10 MHz.
OBW	Measures occupied bandwidth.

NOTE

ACLR DSB 5 MHz and ACLR DSB 10 MHz sum up the leakage power at adjacent channels in upper side band and lower side band and simultaneously measure them. Therefore, the leakage power in upper side band and lower side band cannot be measured separately.

Table 5-40 Example of ACLR DSB Measurement Result

Result of ACLR DSBACLR	Lower Side BandACLR	Upper Side Band
32 dB	--35 dB	-35 dB

Stand-by Screen

When the **TX Analyzer** oftkey is pressed on the [Initial] screen, the [TX Analyzer: Stand-by] screen is displayed. Figure 5-46 is the [TX Analyzer: Stand-by] screen on the standard Tester, Figure 5-47 is the [TX Analyzer: Stand-by] screen on the Tester equipped with the Option W07, Figure 5-46 is the [TX Analyzer: Stand-by] screen on the Tester equipped with the Option W09, and Figure 5-47 is the [TX Analyzer: Stand-by] screen on the Tester equipped with the Option W07 and Option W09.

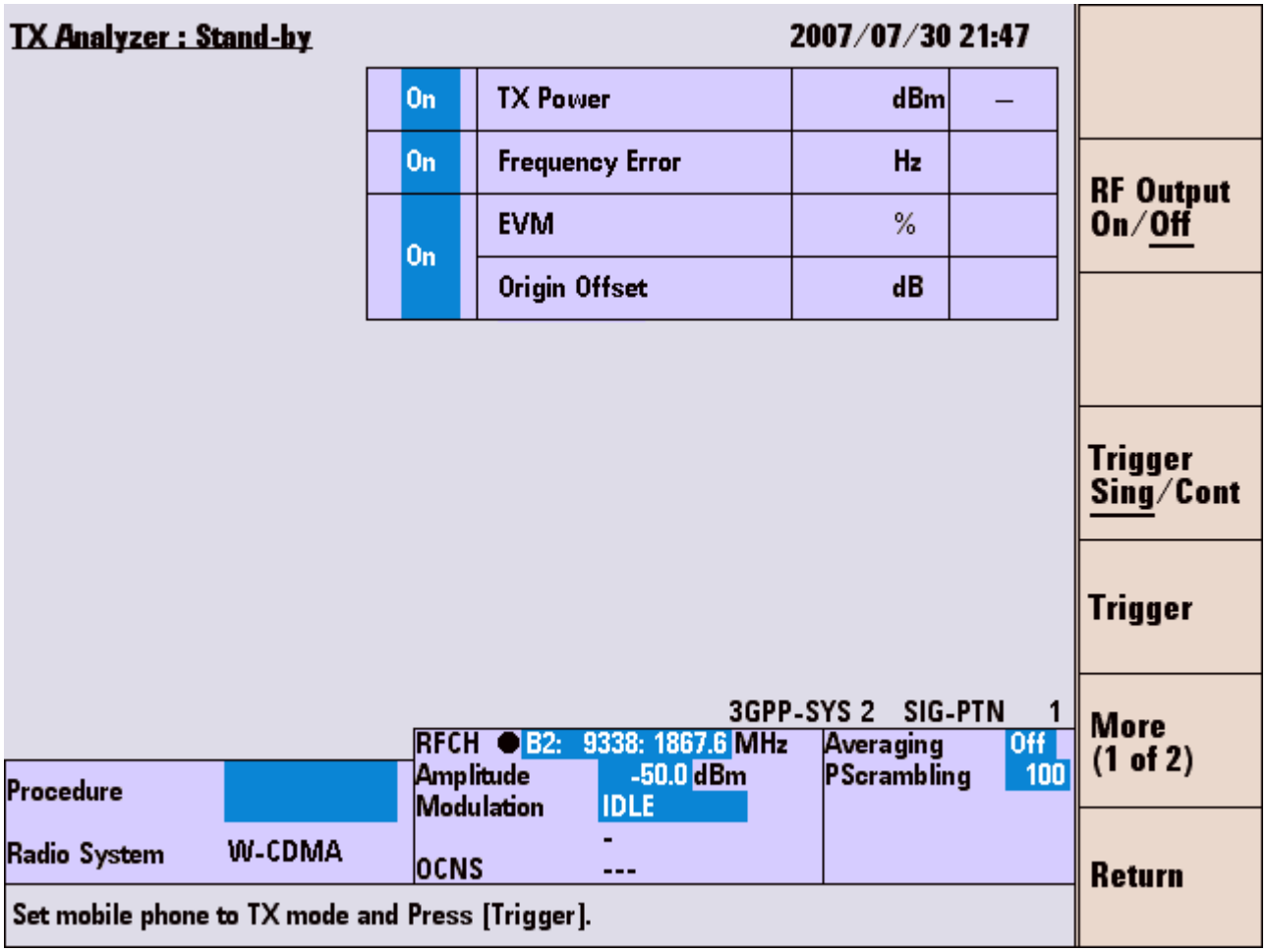


Figure 5-46 [TX Analyzer: Stand-by] Screen (Standard)

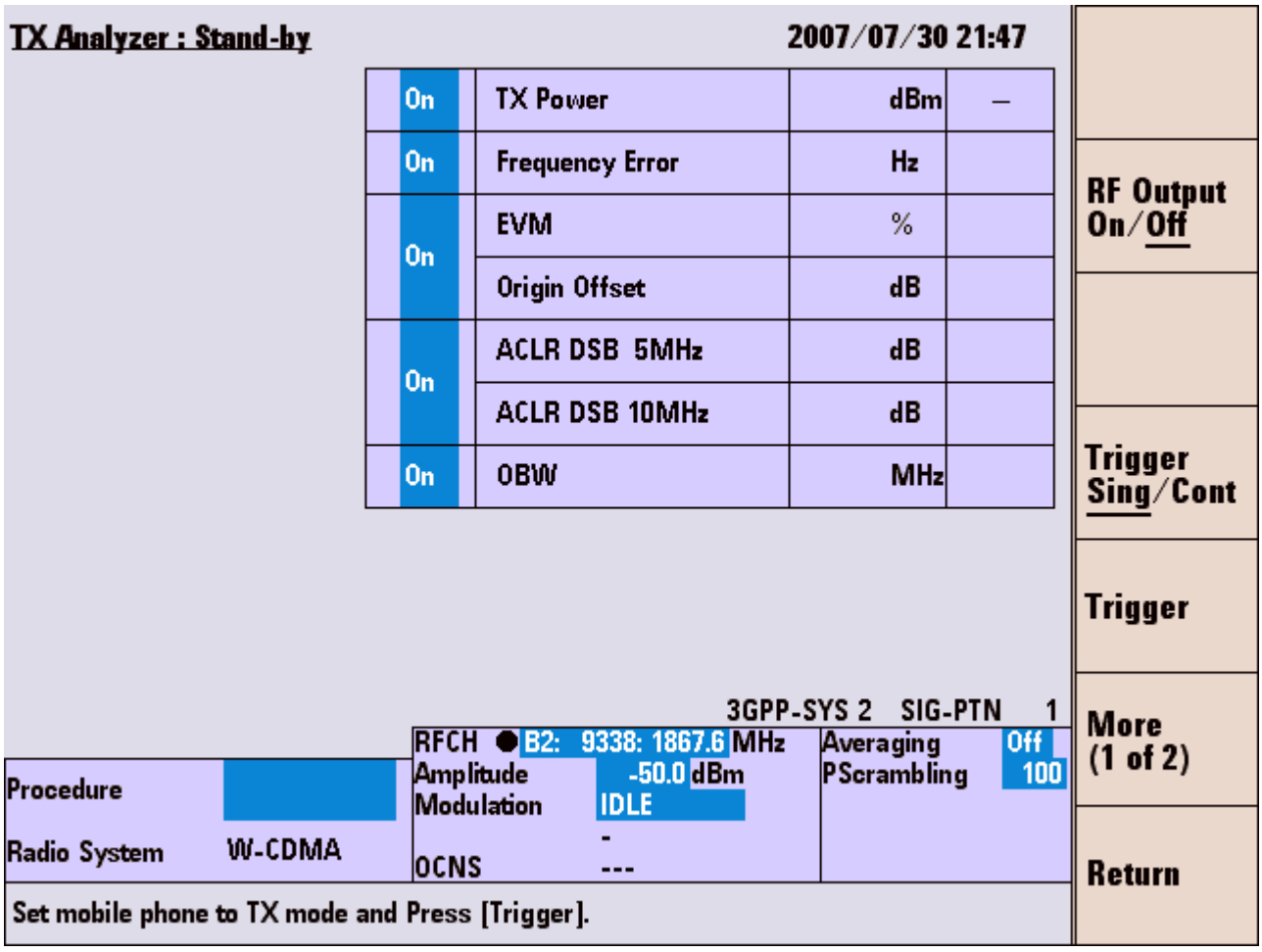


Figure 5-47 [TX Analyzer: Stand-by] Screen (with Option W07)

Softkey Menu Field

Softkey Menu 1

RF Output On/Off: Selects the RF power output from "On" and "Off". "RF On" is displayed at the lower left corner on screen when this is set to "On". This RF Output On/Off setting works with the one on the [Signal Generator] screen.

Trigger Sing/Cont: Selects the trigger mode from "Sing" (single) and "Cont" (continuous). Also, when the trigger mode is "Cont", continuous measurement starts as soon as the screen of [TX Analyzer] is displayed.

- The "Sing" mode setting provides single measurement.
- The "Cont" mode setting provides continuous measurement.

Trigger: Starts single measurement.

More (1 of 2): Displays the softkey menu 2.

Return: Returns to the [Initial] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting on the "Printer" input field on the [Configuration] screen.

System>>: Displays softkey menu 3 to select system.

More (2 of 2): Returns to the softkey menu 1.

Softkey Menu 3

GSM: Changes the system to GSM. The G00 Option is required.

W-CDMA: This softkey is unavailable.

CDMA2000: Changes the system to cdma2000. The C00, Option, C01 Option and C02 Option are required.

Cancel: Cancels selecting system and returns to the softkey menu 2.

Screen Fields

Set the input fields in the screen field according to the following description of Table 5-41 to execute a new test.

Table 5-41 [TX Analyzer: Stand-by] Screen Input Field

Input Field	Description
Measurement item selection	Sets whether or not to execute a group of measurement items or each measurement item as follows. • TX Power • Frequency Error • EVM, Origin Offset • ACLR DSB 5 MHz, ACLR DSB 10 MHz (with the Option W07) • OBW(with the Option W07) Selects "On" or "Off". • On: Executes the measurement item. • Off: Skips the measurement item.

Table 5-41 [TX Analyzer: Stand-by] Screen Input Field

Input Field	Description
Procedure	Displays a list of parameter file names stored in the Tester for selection if the Tester contains parameter files. Select a file to recall for a test. If the Tester is using a parameter file, the file name is shown in this field.
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1:9600 to 9900 (1920.0 MHz to 1980.0 MHz) • Band 2: 9250 to 9550 (1850.0 MHz to 1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz) • Band 3: 8550 to 8925 (1710.0 MHz to 1785.0 MHz) • Band 4: 8550 to 8775 (1710.0 MHz to 1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz) • Band 5: 4120 to 4245 (824.0 MHz to 849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837 (837.5 MHz), 862 (842.5 MHz) Band 6: 4150 to 4200 (830.0 MHz to 840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz)
Amplitude †	Sets the RF output level of the Tester. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps.

Table 5-41 [TX Analyzer: Stand-by] Screen Input Field

Input Field	Description
Modulation ‡	Sets the modulation mode from the followings: • IDLE: Outputs CPICH, P-CCPCH, SCH, PICH and S-CCPCH. • IDLE+DPCH(PN9): Outputs IDLE (without S-CCPCH) Ç RMC 12.2kbps(PN9). • IDLE+DPCH(PN15): Outputs IDLE (without S-CCPCH) Ç RMC 12.2kbps(PN15). • IDLE+DPCH(PN9)+OCNS: Outputs IDLE (without S-CCPCH) Ç RMC 12.2kbps(PN9)+OCNS. • IDLE+DPCH(PN15)+OCNS: Outputs IDLE (without S-CCPCH) Ç RMC 12.2kbps(PN15)+OCNS. This Modulation setting works with the one on the [Signal Generator] screen. This is set to IDLE when the [TX Analyzer] screen is displayed while the "Modulation" field on the [Signal Generator] screen is set to "Off" or Modulation for "HSDPA" is set.
Averaging	Averages respective measurement values of Frequency Error and EVM. Set the averaging number from 2 to 99 or "Off". When this function is not required, select "Off".

† The changing magnification softkey is activated. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

‡ Refer to "Physical Channel Parameters of Signal Generator" on page D-2 about the parameters of physical channel for transmitting and receiving in the Signal Generator mode.

The following are also displayed on the screen field:

- 3GPP-SYS and SIG-PTN
  The 3GPP system and the signaling pattern that are currently set on the Configuration: Test Condition screen are displayed at the lower-right corner of the screen.
- RF On indicator
  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the tester is output to the RF In/Out connector.

Message Field

The following message is displayed in the message field on the TX Analyzer: Stand-by screen:

"Set mobile phone to TX mode and press [Trigger]."

The word surrounded by [ ] in the above message field denotes softkey.

Explanation

The measurement starts in the following way:

When the trigger mode is set to **Sing**,

- Press the **Trigger** softkey on the Stand-by screen to start single measurement on the Measuring screen.
- Press the **Trigger Sing/Cont** softkey on the Stand-by screen to change the trigger mode from **Sing** to **Cont** in order to start continuous measurement.

When the trigger mode is set to **Cont**,

- Continuous measurement starts on a Measuring screen as soon as the screen of TX Analyzer is displayed.

Measuring Screen

When the measurement starts, a [Measuring] screen is displayed. Figure 5-48 is the [Measuring] screen on the standard Tester, Figure 5-49 is the [Measuring] screen on the Tester equipped with the Option W07, Figure 5-48 is the [Measuring] screen on the Tester equipped with the Option W09, and Figure 5-49. is the [Measuring] screen on the Tester equipped with the Option W07 and Option W09.

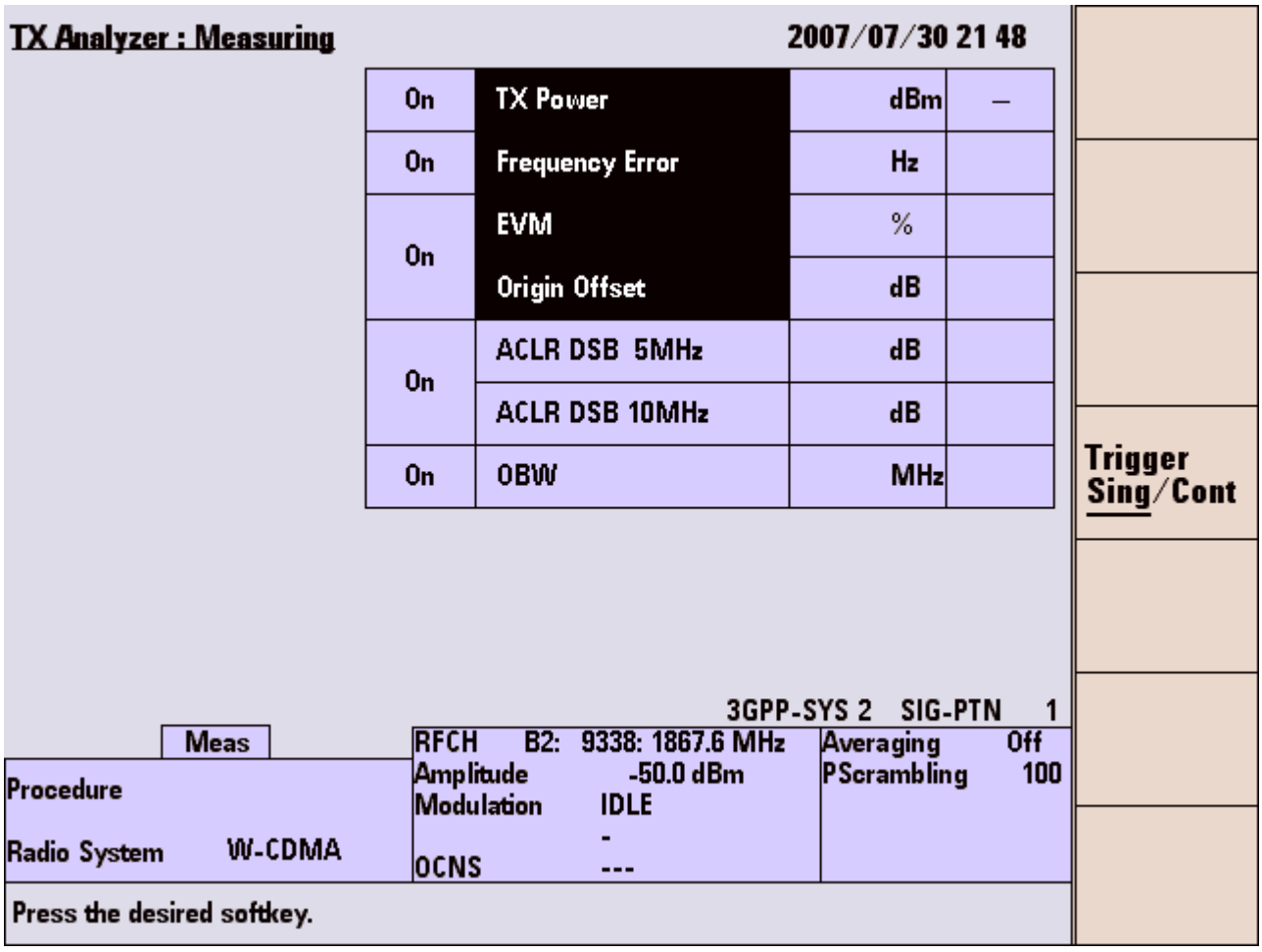


Figure 5-48 [TX Analyzer: Measuring] Screen (with Option W07)

Softkey Menu Field

Softkey Menu

Trigger Sing/Cont: Selects the trigger mode from "Sing" (single) and "Cont" (continuous).

- When the trigger mode is changed from "Sing" to "Cont", continuous measurement starts.
- When the trigger mode is changed from "Cont" to "Sing", continuous measurement is terminated after completion of measuring the item that is being measured.

Message Field

The following message is displayed in the message field on the Measuring screen:

"Press the desired softkey."

Measurement Result Screen

When measurement is completed, a [Stand-by] Measurement Result screen in stand-by mode is displayed.

The measurement results and Pass/Fail results are shown right next to the measurement items.

- "Pass" is shown on blue background when the measurement result is passed.
- "Fail" is shown on red background when the measurement result is failed.

TX Power is measured without limits; therefore, "-" is shown in its Pass/Fail result cell.

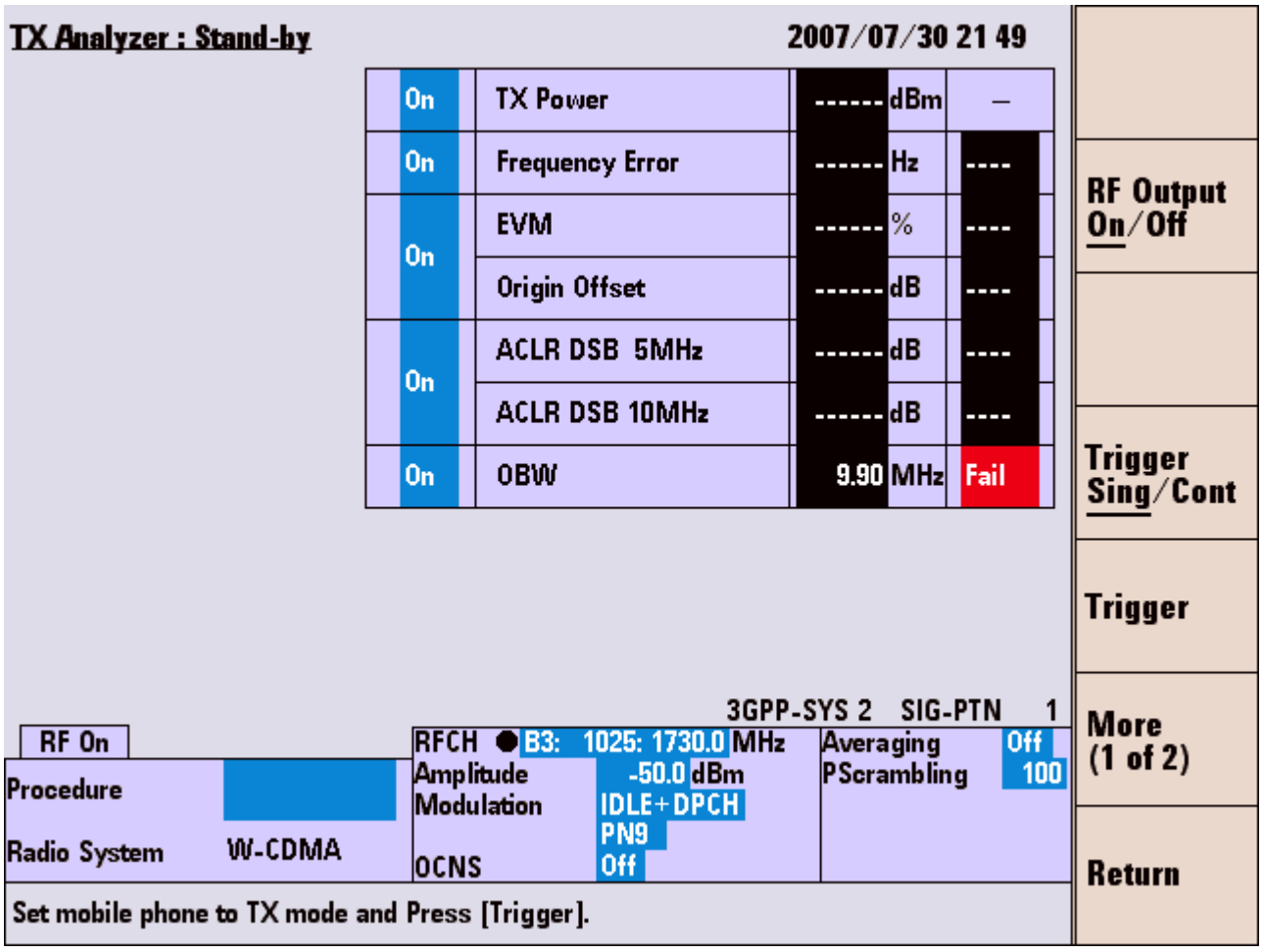


Figure 5-49 [TX Analyzer: Stand-by] Measurement Result Screen (with Option W07)

Softkey Menu Field

Softkey Menu 1

RF Output On/Off: Selects the RF power output from "On" and "Off". "RF On" is displayed at the lower left corner on screen when this is set to "On". This RF Output On/Off setting works with the one on the [Signal Generator] screen.

Trigger Sing/Cont: Selects the trigger mode from "Sing" (single) and "Cont" (continuous).

- The "Sing" mode setting provides single measurement.
- The "Cont" mode setting provides continuous measurement.

Trigger: Starts single measurement.

More (1 of 2): Displays the softkey menu 2.

Return: Returns to the [Initial] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves a screen image in a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

System>>: Displays softkey menu 3 to select system.

More (2 of 2): Returns to the softkey menu 1.

Softkey Menu 3

GSM: Changes the system to GSM. The G00 Option is required.

W-CDMA: This softkey is unavailable.

CDMA2000: Changes the system to cdma2000. The C00, Option, C01 Option and C02 Option are required.

Cancel: Cancels selecting system and returns to the softkey menu 2.

Screen Field

The input fields of the screen field are described in Table 5-42. Set the input fields accordingly to execute a new test.

Table 5-42 [TX Analyzer: Measurement] Results Screen Input Field Descriptions

Input Field	Description
Measurement item selection	Sets whether or not to execute a group of measurement items or each measurement item as follows. • TX Power • Frequency Error • EVM, Origin Offset • ACLR DSB 5 MHz, ACLR DSB 10 MHz (with the Option W07) • OBW(with the Option W07) Selects "On" or "Off". • On: Executes the measurement item. • Off: Skips the measurement item.
Procedure	Displays a list of parameter file names stored in the Tester for selection if the Tester contains parameter files. Select a file to recall for a test. If the Tester is using a parameter file, the file name is shown in this field.

Table 5-42 [TX Analyzer: Measurement] Results Screen Input Field Descriptions (continued)

Input Field	Description
RFCH †	Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1:9600 to 9900 (1920.0 MHz to 1980.0 MHz) • Band 2: 9250 to 9550 (1850.0 MHz to 1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz) • Band 3: 8550 to 8925 (1710.0 MHz to 1785.0 MHz) • Band 4: 8550 to 8775 (1710.0 MHz to 1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz) • Band 5: 4120 to 4245 (824.0 MHz to 849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837 (837.5 MHz), 862 (842.5 MHz) • Band 6: 4150 to 4200 (830.0 MHz to 840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz)
Amplitude †	Sets the RF output level of the Tester. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps.
Modulation ‡	Sets the modulation mode from the followings: • IDLE: Outputs CPICH, P-CCPCH, SCH, PICH and S-CCPCH. • IDLE+DPCH(PN9): Outputs IDLE (without S-CCPCH) Ç RMC 12.2kbps(PN9). • IDLE+DPCH(PN15): Outputs IDLE (without S-CCPCH) Ç RMC 12.2kbps(PN15). • IDLE+DPCH(PN9)+OCNS: Outputs IDLE (without S-CCPCH) Ç RMC 12.2kbps(PN9)+OCNS. • IDLE+DPCH(PN15)+OCNS: Outputs IDLE (without S-CCPCH) Ç RMC 12.2kbps(PN15)+OCNS. This Modulation setting works with the one on the [Signal Generator] screen. This is set to IDLE when the [TX Analyzer] screen is displayed while the "Modulation" field on the [Signal Generator] screen is set to "Off" or Modulation for "HSDPA" is set. Refer to Table 5-29.

Table 5-42 [TX Analyzer: Measurement] Results Screen Input Field Descriptions (continued)

Input Field	Description
Averaging	Averages respective measurement values of Frequency Error and EVM. Set the averaging number from 2 to 99 or "Off". When this function is not required, select "Off".

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

‡ Refer to "Physical Channel Parameters of Signal Generator" on page D-2 about the parameters of physical channel for transmitting and receiving in the Signal Generator mode.

The following are also displayed on the screen field:

- 3GPP-SYS and SIG-PTN
  The 3GPP system and the signaling pattern that are currently set on the Configuration: Test Condition screen are displayed at the lower-right corner of the screen.
- RF On indicator
  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the tester is output to the RF In/Out connector.

Message Field

The following message is displayed in the message field on the Measurement Result screens:

"Set mobile phone to TX mode and press [Trigger]."

The word surrounded by [ ] in the message field above denotes softkey.

Signal Generator

Overview

The purpose of the Signal Generator is to generate W-CDMA and HSDPA (when the Option W06 is installed) compliant RF signals.

NOTE

Install the Option W06 when using the HSDPA function.

If the RF-CPU software revision is previous revision of 1.10 or before, setting range of the Amplitude is from -110.0 dBm to -20.0 dBm.

For numeric value entry, the changing magnification softkey menu is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

Signal Generator Screen

When the **Signal Generator** softkey on the Initial screen is pressed, the Signal Generator screen shown inn Figure 5-50 is displayed.

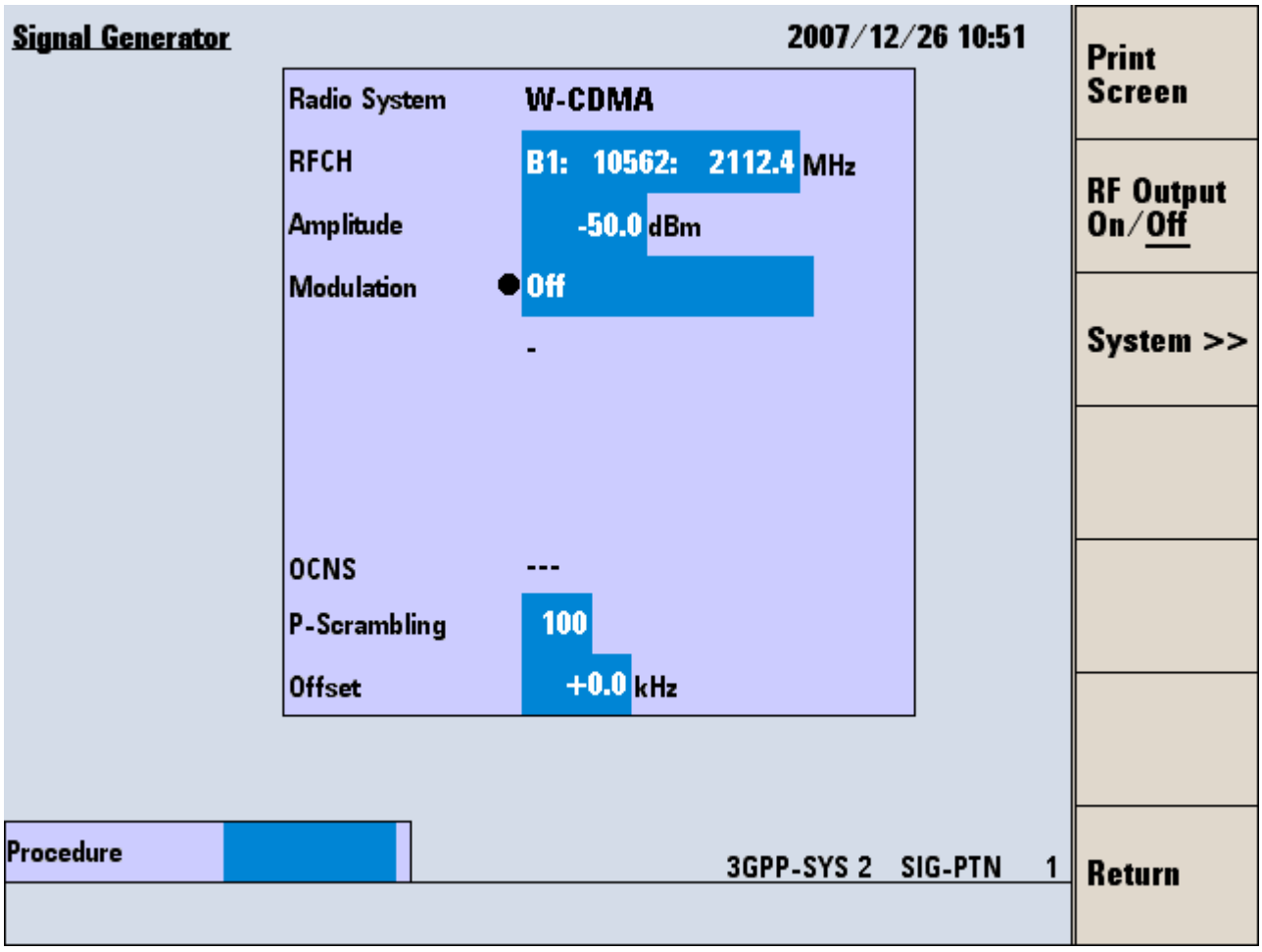


Figure 5-50 [Signal Generator] Screen

Softkey Menu Field

Softkey Menu 1

Print Screen: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

RF Output On/Off : Selects the RF power output from "On" and "Off".

- "RF On" is shown at the lower left corner of screens when this is set to "On".

System>>: Displays softkey menu 2 to select system.

Return: Returns to the [Initial] screen.

Softkey Menu 2

GSM: Changes the system to GSM. The G00 Option is required.

W-CDMA: This softkey is unavailable.

CDMA2000: Changes the system to cdma2000. The C00, Option, C01 Option and C02 Option are required.

Cancel: Cancels selecting system and returns to the softkey menu 1.

Screen Field

The input fields needed to generate RF signals are described in Table 5-43. Set the input fields accordingly to generate RF signals.

Table 5-43 [Signal Generator] Screen Input Field

Input Field	Description
Procedure	Displays a list of parameter file names stored in the tester for selection if the tester contains parameter files. Select a file to recall for a test. If the tester is using a parameter file, the file name is shown in this field.

Table 5-43 [Signal Generator] Screen Input Field

Input Field	Description
RFCH †	Sets the downlink channel number to generate the signal. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1:10550 to 10850 (2110.0 MHz to 2170.0 MHz) • Band 2: 9650 to 9950 (1930.0 MHz to 1990.0 MHz) 412 (1932.5 MHz), 437 (1937.5 MHz), 462 (1942.5 MHz), 487 (1947.5 MHz), 512 (1952.5 MHz), 537 (1957.5 MHz), 562 (1962.5 MHz), 587 (1967.5 MHz), 612 (1972.5 MHz), 637 (1977.5 MHz), 662 (1982.5 MHz), 687 (1987.5 MHz) • Band 3: 9025 to 9400 (1805.0 MHz to 1880.0 MHz) • Band 4: 10550 to 10775 (2110.0 MHz to 2155.0 MHz) 1462 (2112.5 MHz), 1487 (2117.5 MHz), 1512 (2122.5 MHz), 1537 (2127.5 MHz), 1562 (2132.5 MHz), 1587 (2137.5 MHz), 1612 (2142.5 MHz), 1637 (2147.5 MHz), 1662 (2152.5 MHz) • Band 5: 4345 to 4470 (869.0 MHz to 894.0 MHz) 1007 (871.5 MHz), 1012 (872.5 MHz), 1032 (876.5 MHz), 1037 (877.5 MHz), 1062 (882.5 MHz), 1087 (887.5 MHz) • Band 6: 4375 to 4425 (875.0 MHz to 885.0 MHz) 1037 (877.5 MHz), 1062 (882.5 MHz)
Amplitude †	Sets the RF output level. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps.
Modulation ‡	Sets the modulation mode from the followings: • Off: Outputs carrier wave without modulation. • IDLE: Outputs CPICH, P-CCPCH, SCH, PICH and S-CCPCH. • IDLE+DPCH(PN9): Outputs IDLE (without S-CCPCH) Ç RMC 12.2kbps(PN9). • IDLE+DPCH(PN15): Outputs IDLE (without S-CCPCH) Ç RMC 12.2kbps(PN15). • IDLE+DPCH(PN15) + H-Set1 to H-Set5(PN15, QPSK or 16QAM) Outputs IDLE (without S-CCPCH) + RMC 12.2 kbps(PN15) HSDPA(H-Set1 to H-Set5, PN15) • IDLE+DPCH(PN15) + CQI-1 to CQI-30(PN15, QPSK or 16QAM) Outputs IDLE (without S-CCPCH) + RMC 12.2 kbps(PN15) HSDPA(CQI-1 to CQI-30, PN15) Refer to Table 5-29.

Table 5-43 [Signal Generator] Screen Input Field

Input Field	Description
UE Category (Option W06)	Sets UE Category. Allowable range is from 1 to 6, 11, and 12. The setting range of Modulation Type and Ec/Ior are varied by the combination of FRC Type and UE Category. Refer to Table 5-29.
Ec/Ior (Option W06)	Sets the code power of the DPCH, HS-SCCH, HS-PDSCH by fixed combination. The available combination is defined by the combination of the FRC Type, Modulation Type, UE Category. The HS-PDSCH code power stated above is the total amount of HS-PDSCH code power of each Channlisation Code. Refer to Table 5-29.
OCNS	Selects "On" or "Off". • On: Adds OCNS to Modulation signal. • Off: Does not add OCNS to Modulation signal. When Modulation is set to IDLE, OCNS setting is invalid and "---" is displayed. When IDLE+DPCH + H-Set1 to H-Set5 or CQI-1 to CQI-30 are selected for Modulation, OCNS is fixed to "On".

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

‡ Refer to "Physical Channel Parameters of Signal Generator" on page D-2 about the parameters of physical channel for transmitting and receiving in the Signal Generator mode.

The following are also displayed on the screen field:

- 3GPP-SYS and SIG-PTN
  The 3GPP system and the signaling pattern that are currently set on the Configuration: Test Condition screen are displayed at the lower-right corner of the screen.
- RF On indicator
  "RF On" indicator at the lower-left corner of the screen is displayed only when the RF signal from the tester is output to the RF In/Out connector.

Configuration

Overview

There are four major functions in this mode:

Configuration
Test Sequence Configuration
Test Condition Configuration
File Management

NOTE

For numeric value entry, the changing magnification softkey menu is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

Configuration Screen

When the **Config** softkey is pressed on the [Initial] screen, the [Configuration] screen as Figure 5-51 is displayed.

The following various condition are set on the [Configuration] screen:

- Execution sequence of Automatic Test
- Test parameters
- Relevant to I/F
- Other setting

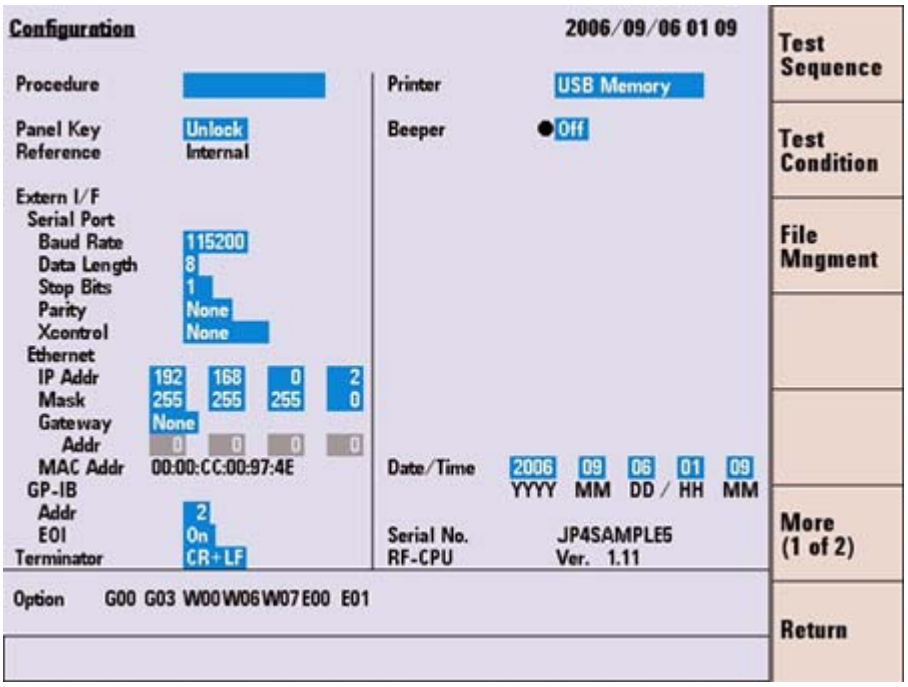


Figure 5-51 [Configuration] Screen

Softkey Menu Field

Softkey Menu 1

Test Sequence: Displays the [Configuration: Test Sequence] screen.

Test Condition: Displays the [Configuration: Test Condition] screen.

File Management: Displays the [Configuration: File Management] screen.

Network Setting: Displays the [Network Setting] screen.

More (1 of 3): Displays the Softkey Menu 2.

Return: Returns to the [Initial] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or stores the screen image in a USB memory device, according to the "Printer" field on the [Configuration] screen.

More (2 of 3): Displays the Softkey Menu 3.

Softkey Menu-3

Debug Data > USB: Outputs debug data into a USB memory device.

More (3 of 3): Returns to the Softkey Menu

If the option E00 and the option E02 are not installed, setting items for GP-IB are grayed out (disabled) as Figure 5-52.

Figure 5-52 Part of [Configuration] screen (without Option E00 and E02)

If the option E01 is not installed, setting items for the serial port are grayed out (disabled) as Figure 5-53.

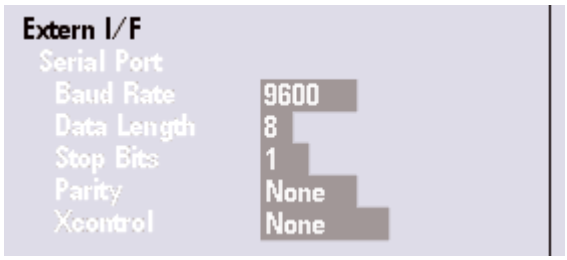


Figure 5-53 Part of [Configuration] screen (without Option E01)

Screen Field

The input fields needed to generate RF signals are described in Table 5-44. Set the input fields accordingly to generate RF signals.

Table 5-44 [Configuration] Screen Input Field

Input Field	Description
Procedure	Displays a list of parameter file of Configuration that is stored in the Tester. Select a file to recall parameters for a test. If the Tester is using a parameter file, the file name is displayed in this field.

Panel Key	Restricts the acceptance of system setting on the front panel of the Tester.
	Selects "Lock" or "Unlock".
	• Lock: The following functions are unavailable.
	  • Manual Test, TX Analyzer, Signal Generator
	  • Changing for TCH and BCCH settings in Automatic Test
	  • Test Sequence, Test Condition, and File Management in the Configuration mode.
	• Unlock: No restriction for setting on the front panel of the Tester.

Serial Port †	Sets the serial (RS-232C) port communication condition to use external control. This function is unavailable without Option E01. • Baud Rate: Sets communication speed to 9600, 19200, 38400, 57600 or 115200 bits per second. • Data Length: Sets data bit length to 7 or 8 bits. • Stop Bits: Sets stop bit length to 1, 1.5 or 2 bits. • Parity: Sets parity check mode to "None", "Odd" or "Even". • Xcontrol: Sets flow control to "None" or "Xon/Xoff". Reboot the Tester after changing Serial Port setting.

GP-IB †	Sets GP-IB port condition. This function is unavailable without Option E00 or Option E02.
	• Address: Sets the address. The allowable range is from 1 to 15.
	• EOI: Sets EOI control. Select "On" or "Off".
	  • On: Enables EOI control. (Terminate character is invalid).
	  • Off: Disables EOI control. (Terminate character is valid).
	Reboot the Tester after changing GP-IB setting.

Terminator	• Sets a terminator of output text data to "CR", "LF" or "CR+LF". This is the Terminator outputted from the Tester. This setting is used for remote control with Serial, Ethernet and GP-IB. (The Terminator of input text data is LF) • The Terminator of input text data for GPIB option E00 : set to CR+LF for GPIB option E02 : set to LF.
Date/Time †	Date/Time*Sets the current date and time in the following formats: • YYYY: Sets the year. The allowable range is from 1990 to 2037. • MM: Sets the month. The allowable range is from 01 to 12. • DD: Sets the day. The allowable range is from 01 to 31. • HH: Sets the hour. The allowable range is from 00 to 23. • MM: Sets the minute. The allowable range is from 00 to 59.

Table 5-44 [Configuration] Screen Input Field

Input Field	Description
Printer	Sets the output device of print screen to "USB Memory" or "EPSON PM-G800". • USB Memory: Saves an image file of screen into a USB memory device. The image format is PNG. • EPSON PM-G800: Prints a hardcopy of screen in the specified printer.
Beeper	Sets beep. Selects "On" or "OFF". • On: Beeps for each step of operation. • OFF: Beeps are suppressed.

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

Other display items are shown in Table 5-45.

Table 5-45 [Configuration] Screen Information

Item Information	Description
Reference	Displays the reference signal source in use. The reference signal source cannot be changed on this screen. To change the setting, go to [Top Menu] screen and select the [Configuration] screen. Refer to "Configuration" on page 5-145 for details. • Internal: The internal 10 MHz reference signal is used. • External: The external 10 MHz reference signal is used. The 10 MHz reference signal must be supplied to the "10 MHz Reference IN" connector on the rear panel.
Serial No.	Displays the serial number of the Tester.
RF-CPU	Displays the revision information of RF-CPU.
MC-1x	Displays the revision information of MC-1x CPU. This information is displayed when C00 and C01 options are installed.
1xEV-DO	Displays the revision information of 1xEV-DO CPU. This information is displayed when C00, C01 and C02 options are installed.
Option	Displays the option numbers installed in the Tester with three digit alphanumeric characters.

Configuration: Test Sequence Screen

When the **Test Sequence** softkey on the [Configuration] screen is pressed, the [Configuration: Test Sequence] screen. as Figure 5-54 is displayed.

Configure a test condition for Automatic Test on this screen.

The attenuation values set in the [Configuration] screen are used for correcting the path losses between the mobile phone and the Tester for each band; however, if the attenuation has frequency or channel dependency in one band, you can compensate the RF test results with the attenuation values of "ATT In" and "ATT Out" setting on this screen.

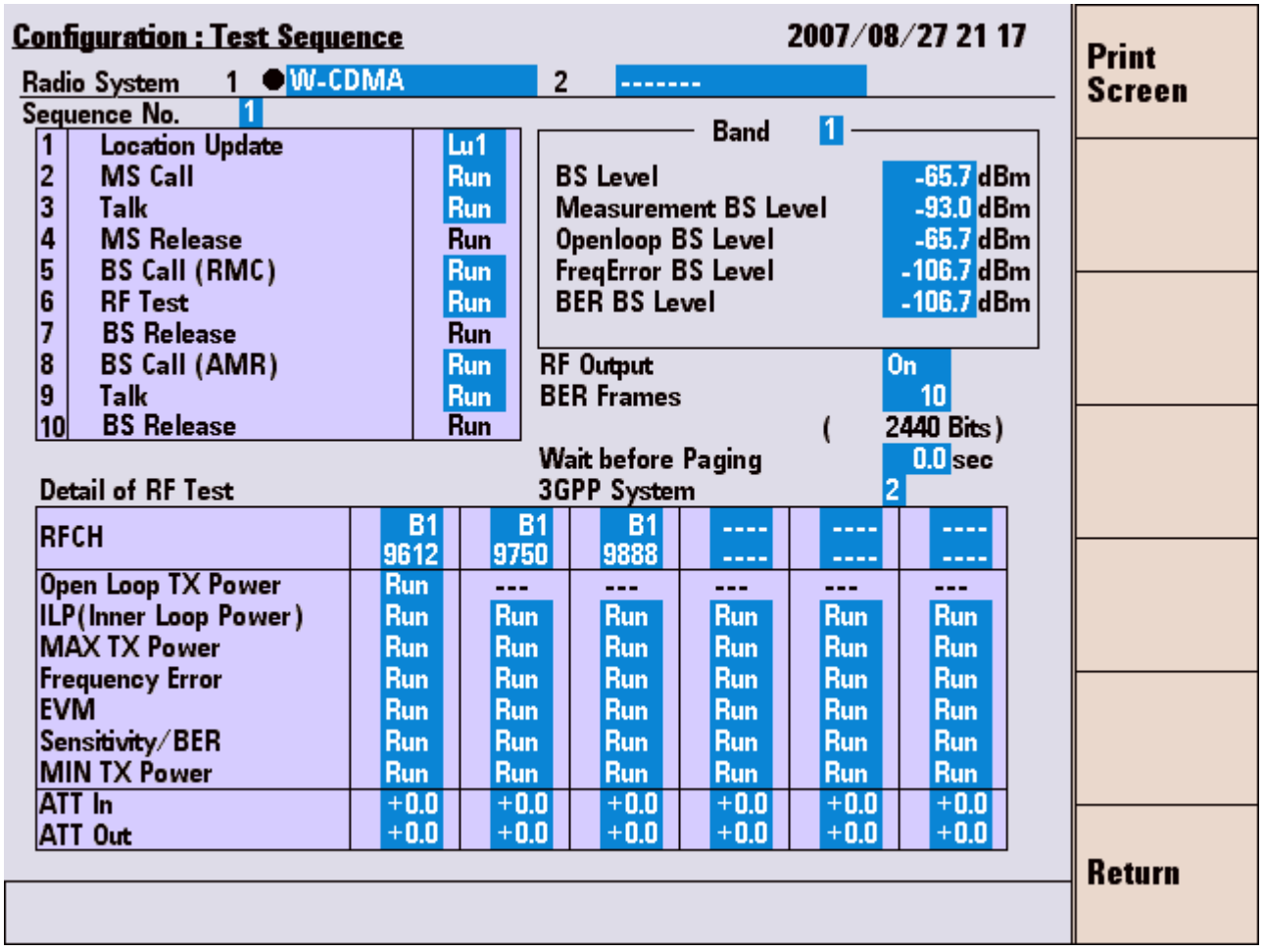

Configuration : Test Sequence
2007/08/27 21 17
Radio System 1 W-CDMA 2 -------
Sequence No. 1
1 Location Update Lu1
2 MS Call Run
3 Talk Run
4 MS Release Run
5 BS Call (RMC) Run
6 RF Test Run
7 BS Release Run
8 BS Call (AMR) Run
9 Talk Run
10 BS Release Run
Band 1
BS Level -65.7 dBm
Measurement BS Level -93.0 dBm
Openloop BS Level -65.7 dBm
FreqError BS Level -106.7 dBm
BER BS Level -106.7 dBm
RF Output On
BER Frames 10
(2440 Bits)
Wait before Paging 0.0 sec
3GPP System 2
Detail of RF Test
RFCH B1 9612 B1 9750 B1 9888 ---- ---- ---- ---- ---- ----
Open Loop TX Power Run --- --- --- --- ---
ILP(Inner Loop Power) Run Run Run Run Run Run
MAX TX Power Run Run Run Run Run Run
Frequency Error Run Run Run Run Run Run
EVM Run Run Run Run Run Run
Sensitivity/BER Run Run Run Run Run Run
MIN TX Power Run Run Run Run Run Run
ATT In +0.0 +0.0 +0.0 +0.0 +0.0 +0.0
ATT Out +0.0 +0.0 +0.0 +0.0 +0.0 +0.0
Print Screen
Return

Figure 5-54 [Configuration: Test Sequence] Screen

Softkey Menu Field

Softkey Menu

Print Screen: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting of the "Printer" on the [Configuration] screen.

Return: Returns to the [Configuration] screen.

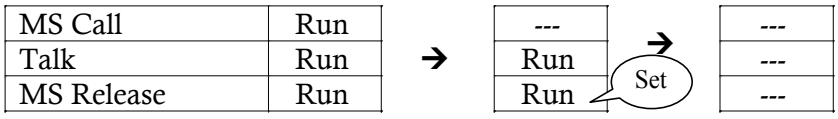
Automatic Test Flow

Setting Automatic Test flow:

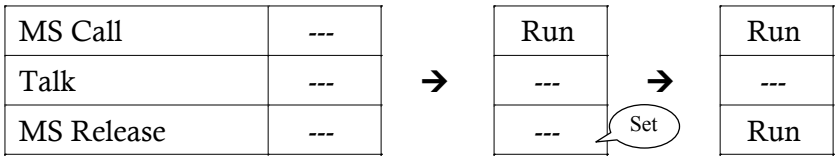
- For "Location Update" step in the test flow:
  Select "Lu1" to execute Mobile Phone Power On Location Update, "Lu2" to execute BS Change Location Update or "---" to skip the step in the test flow.
- For other steps in the test flow:
  Select "Run" to execute the step or "---" to skip the step in the test flow. Refer to the following paragraph for detailed explanation.

Detailed Explanation for Run | --- Setting of Test Item Except Location Update

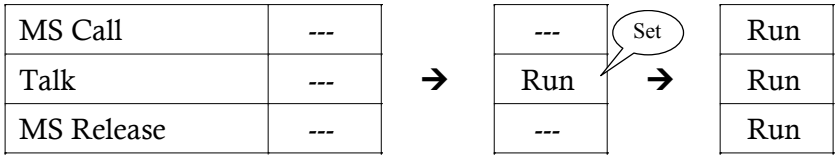
- When MS Call or BS Call is set to "---", corresponding Talk, and MS Release or BS Release are automatically set to "---". The following is an example of the sequence from MS Call to MS Release.



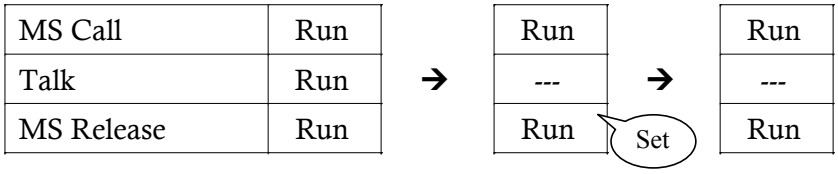
- When MS Call or BS Call is set to "Run", the corresponding MS Release or BS Release is automatically set to "Run". The following is an example of the sequence from MS Call to MS Release.



- When Talk or RF Test is set to "Run", even MS Call or BS Call has set to "---", MS Call or BS Call and MS Release or BS Release are automatically set to "Run". The following is an example of the sequence from MS Call to MS Release.



- When MS Call or BS Call has set to "Run", even Talk or RF Test is set to "---", MS Call or BS Call and MS Release or BS Release remains to be set to "Run". The following is an example of the sequence from MS Call to MS Release.



Screen Field

The following input fields need to be set in order to execute Automatic Test. The descriptions of the fields are listed in Table 5-46. This manual explains when W-CDMA is selected for Sequence1 or Sequence2. Refer to the *N9360A Multi UE Tester GSM User Manual* when you select "GSM850", "GSM900", "DCS1800", or "PCS1900". Also, refer to the *N9360A Multi UE Tester cdma2000 User Manual* when you select "MC-1x" or "1xEV-DO".

System Handover test requires the following conditions:

- Select any band while Sequence1 is set to W-CDMA and Sequence2 is set to GSM.
- Set 3GPP System to 2, 3, or 4.

When above two conditions are satisfied, BS Release/Handover shift becomes available. Select Handover to execute System Handover.

When Sequence 1 and Sequence 2 are set to W-CDMA, up to 12 channels can be measured by using Handover function. Set the end of

BS Call (RMC) of Sequence 1 to Handover instead of BS Release.

Table 5-46 [Configuration: Test Sequence] Screen Input Field

Input Field	Description
Radio System	Sets the radio system of Sequence 1 and Sequence 2. Required options are in parentheses. • GSM850, GSM900, DCS1800 or PCS1900 (G00) • W-CDMA (W00) • CDMA2000 MC-1x (C00, C01) • CDMA2000 1xEV-DO (C00, C01, C02) • "-----" (Displays in Radio System 2. When using only the Sequence 1, this item is selected.) When "CDMA2000 1xEV-DO" is set in the Sequence 1 of the Radio System, "CDMA2000 1xEV-DO" is able to set in the Sequence 2.
Sequence No.	Selects the number of the sequence to switch the screen between Sequence 1 and Sequence 2 in order to configure the screen of the Sequence.

Table 5-46 [Configuration: Test Sequence] Screen Input Field

Input Field	Description
BS Level (Band) †	• Band: Sets the Band of BS Level which will be set. • BS Level: Sets a RF output level at signaling (not at measurement). The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps. • Measurement BS Level: Sets a RF output level at MAX TX Power, Inner Loop Power and EVM measurement. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps. • Openloop BS Level: Sets a RF output level at Open Loop TX Power measurement. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps. • FreqError BS Level: Sets a RF output level at Frequency Error measurement. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps. • BER BS Level: Sets a RF output level at BER measurement. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps.
Test Items	Sets execution or skip for each signaling test step. Refer to "Automatic Test" on page 5-30.
RF Output	Sets the RF output control for Automatic Test. Select "Auto" or "On". • Auto: Outputs RF signal only during measurement. • On: Outputs RF signal while and [Automatic Test] screen is displayed.
BER Frames †	Sets the number of test frames for BER measurement. The allowable range is from 1 to 4100 in 1 step. (1 Frame = 1 TTI) Also, a bit number according to BER Frames is displayed between parentheses. The bit number is calculated by an equation "BER Frames multiplied by 244". While BER Frames is entered, The bit number is displayed in conjunction with the value of BER Frames.
Wait Before Paging †	Sets the wait time before paging transmission during Open Loop TX Power measurement. The allowable range is from 0.0 (no wait) to 99.9 seconds in 0.1second step.
3GPP System	Selects 3GPP version and the protocol. Contact the Agilent Sales Department about corresponding mobile phones. The parameter is 1, 2, 3, or 4.

Table 5-46 [Configuration: Test Sequence] Screen Input Field

Input Field	Description
Detail of RF Test	Sets measurement methods for six channels. • RFCH †: Sets the uplink channel number to execute a test. A band symbol is also displayed. Each band symbol corresponds to a band as follows. • B1: Band 1 • B2: Band 2 • B3: Band 3 • B4: Band 4 • B5: Band 5 • B6: Band 6 The allowable range is as follows: • Band 1:9600 to 9900 (1920.0 MHz to 1980.0 MHz) • Band 2: 9250 to 9550 (1850.0 MHz to 1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz) • Band 3: 8550 to 8925 (1710.0 MHz to 1785.0 MHz) • Band 4: 8550 to 8775 (1710.0 MHz to 1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz) • Band 5: 4120 to 4245 (824.0 MHz to 849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837 (837.5 MHz), 862 (842.5 MHz) • Band 6: 4150 to 4200 (830.0 MHz to 840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz) • "---" denotes skip. RFCH1 cannot be set to "---". • ATT In a: Sets attenuation values for receiving. The allowable range is -9.9 to +9.9 in 0.1 steps. • ATT Out a: Sets attenuation values for transmission. The allowable range is -9.9 to +9.9 in 0.1 steps. • Sets execution or skip for the following each RF test. Set each item to "Run" or "---". • Open Loop TX Power (only for CH1) • ILP (Inner Loop Power) • MAX TX Power • Frequency Error • EVM • Sensitivity/BER

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

Configuration: Test Condition Screen

When the **Test Condition** softkey on the Configuration screen is pressed, the Configuration: Test Condition as Figure 5-55 is displayed.

When the **Test Condition** softkey on the Configuration screen is pressed, the Configuration: Test Condition such as Figure 5-55 (W-CDMA Mode = W-CDMA) or the Figure 5-56 (W-CDMA Mode = HSDPA) is displayed.

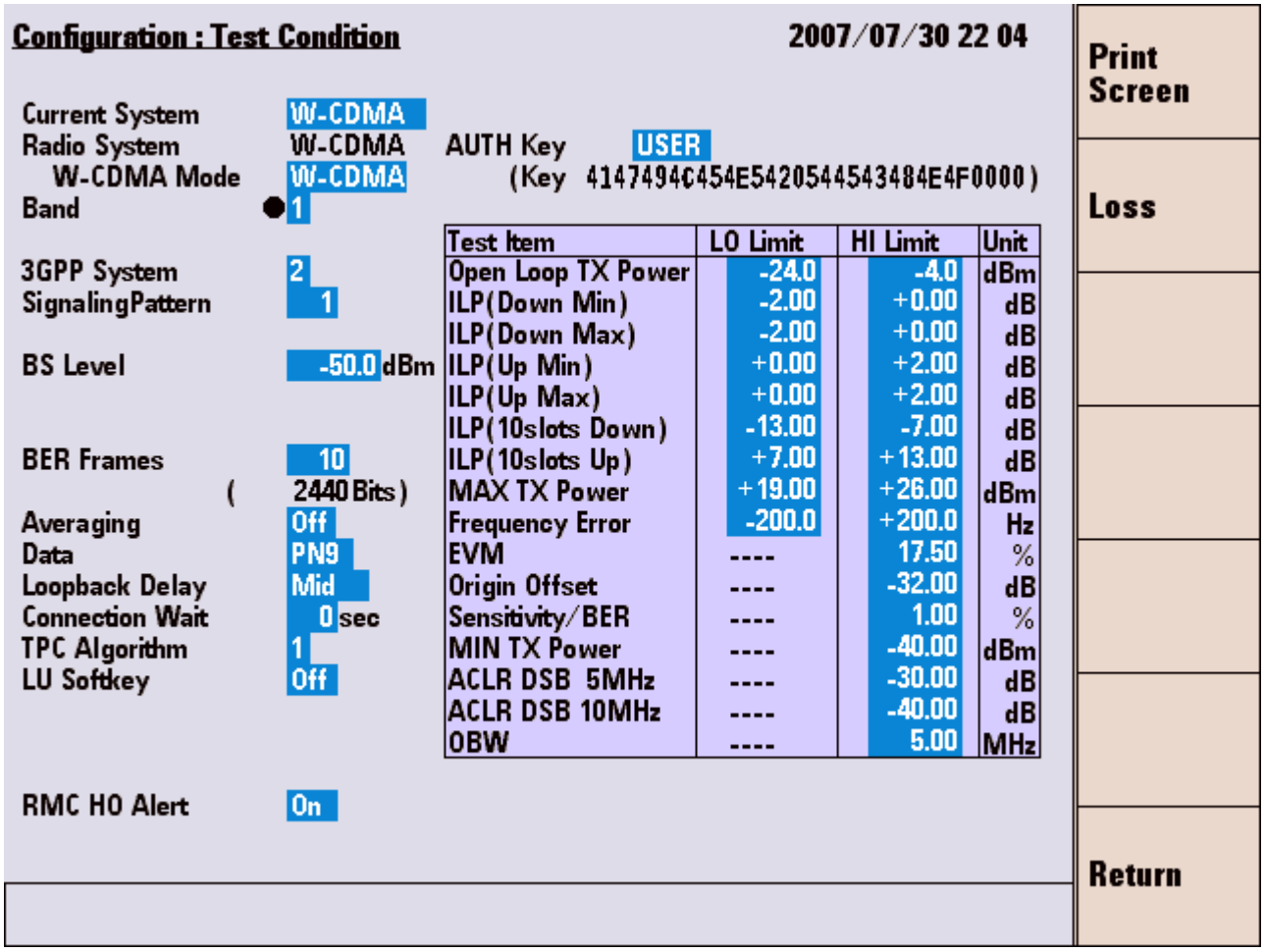

Configuration : Test Condition
2007/07/30 22 04
Current System W-CDMA
Radio System W-CDMA
W-CDMA Mode W-CDMA
Band 1
3GPP System 2
SignalingPattern 1
BS Level -50.0 dBm
BER Frames 10
(2440 Bits)
Averaging Off
Data PN9
Loopback Delay Mid
Connection Wait 0 sec
TPC Algorithm 1
LU Softkey Off
RMC HO Alert On
AUTH Key USER
(Key 4147494C454E5420544543484E4F0000)
Test Item | LO Limit | HI Limit | Unit
Open Loop TX Power | -24.0 | -4.0 | dBm
ILP(Down Min) | -2.00 | +0.00 | dB
ILP(Down Max) | -2.00 | +0.00 | dB
ILP(Up Min) | +0.00 | +2.00 | dB
ILP(Up Max) | +0.00 | +2.00 | dB
ILP(10slots Down) | -13.00 | -7.00 | dB
ILP(10slots Up) | +7.00 | +13.00 | dB
MAX TX Power | +19.00 | +26.00 | dBm
Frequency Error | -200.0 | +200.0 | Hz
EVM | ---- | 17.50 | %
Origin Offset | ---- | -32.00 | dB
Sensitivity/BER | ---- | 1.00 | %
MIN TX Power | ---- | -40.00 | dBm
ACLR DSB 5MHz | ---- | -30.00 | dB
ACLR DSB 10MHz | ---- | -40.00 | dB
OBW | ---- | 5.00 | MHz
Print Screen
Loss
Return

Figure 5-55 [Configuration: Test Condition] Screen (W-CDMA Mode=W-CDMA)

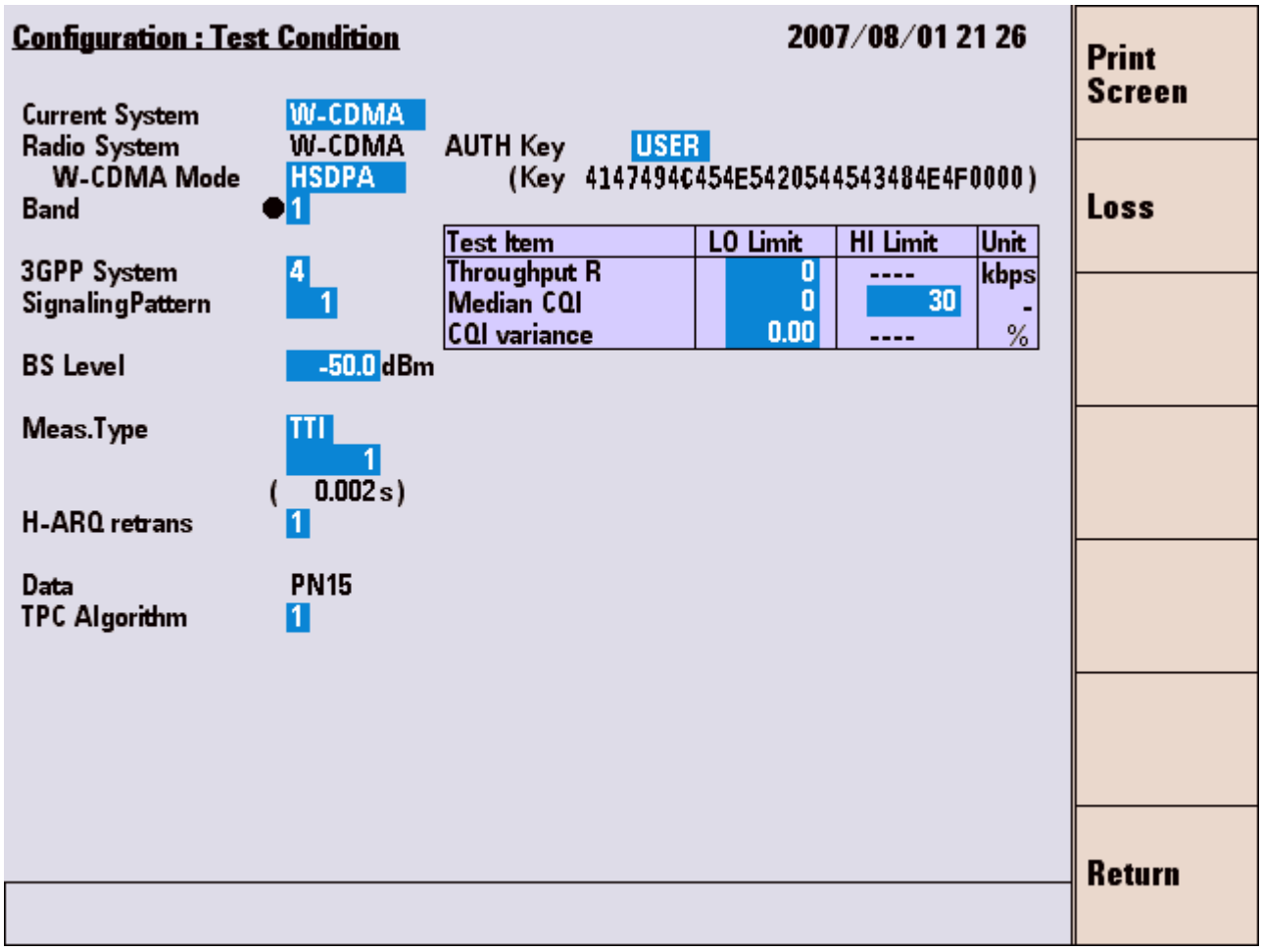


Figure 5-56 [Configuration: Test Condition] Screen (W-CDMA Mode=HSDPA)

When the Option W07 is installed in the Tester, the setting items for ACRL and OBW measurement are added as Figure 5-57.

Test Item	LO Limit	HI Limit	Unit
Open Loop TX Power	-24.0	-4.0	dBm
ILP(Down Min)	-2.00	+0.00	dB
ILP(Down Max)	-2.00	+0.00	dB
ILP(Up Min)	+0.00	+2.00	dB
ILP(Up Max)	+0.00	+2.00	dB
ILP(10slots Down)	-13.00	-7.00	dB
ILP(10slots Up)	+7.00	+13.00	dB
MAX TX Power	+19.00	+26.00	dBm
Frequency Error	-200.0	+200.0	Hz
EVM	----	17.50	%
Origin Offset	----	-32.00	dB
Sensitivity/BER	----	1.00	%
MIN TX Power	----	-40.00	dBm
ACLR DSB 5MHz	----	-30.00	dB
ACLR DSB 10MHz	----	-40.00	dB
OBW	----	5.00	MHz

Figure 5-57 [Configuration: Test Condition] Screen (with Option W07)

Softkey Menu Field

Softkey Menu

Print Screen: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

Loss: Goes to the [Configuration Test Condition] screen.

Return: Returns to the [Configuration] screen.

W-CDMA Mode is set to W-CDMA

Screen Field

The following input fields of parameters need to be set according to the description of Table 5-47.

Table 5-47 [Configuration: Test Condition] Screen Input Field

Input Field	Description
Current system	Displays an active Tester. Selects a test mode from "GSM", "W-CDMA" and "CDMA2000". GSM is valid when G00 Option is installed in the Tester. CDMA2000 is valid when cdma2000 Option is installed in the Tester. W-CDMA Mode

Table 5-47 [Configuration: Test Condition] Screen Input Field

Input Field	Description
W-CDMA Mode	Selects W-CDMA Mode from W-CDMA or HSDPA. This item is selectable only when the Option W06 is installed and valid 3GPP system is existing in the Tester.
Band	Sets a band to from 1 to 6. This setting is for Manual Test, TX Analyzer and Signal Generator.
3GPP System	Selects 3GPP version and the protocol. Contact the Agilent Sales Department about corresponding mobile phones. The parameter is 1, 2, 3 or 4.
Signaling Pattern †	Sets a signaling pattern. The allowable range is from 1 to 255 in 1 step. Select 1 at present because settings over 2 will be extended in future.
BS Level †	Sets a RF output level for selected band. This setting is for Manual Test, TX Analyzer and Signal Generator. Also, this setting can be done on the each test screen. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB steps.
BER Frames †	Sets the number of test frames for BER measurement. This setting is for Manual Test. Also, this setting can be done on the [Manual Test] screen. The allowable range is from 1 to 4100 in 1 step. (1 Frame = 1 TTI) Also, a bit number according to BER Frames is displayed between parentheses. The bit number is calculated by an equation "BER Frames multiplied by 244". While BER Frames is entered, The bit number is displayed in conjunction with the value of BER Frames.
Averaging	Averages respective measurement values of Frequency Error and EVM. Set the averaging number from 2 to 99 or "Off". When this function is not required, select "Off". This setting is for Automatic Test, Manual Test and TX Analyzer. Also, this setting can be done on the [Manual Test] and the [TX Analyzer] screen.
Data	Sets transmit data to "PN9" or "PN15". This setting is for Automatic Test and Manual Test.
Loopback Delay	Sets voice loopback delay for Talk test to "Short", "Mid" or "Long". This setting is for Automatic Test and Manual Test.
Connection Wait	Sets the connection response function for MS Call in Manual Test. The allowable range is from 0 to 120 in 1 sec step. A parameter value sets the way to respond. • 0: The Tester automatically responds to MS Call immediately. • 1 to 120: Sets a time out of waiting for response. After the time is over, the Tester automatically responds to the call.
TPC Algorithm	Sets the algorithm of power control to 1 or 2 for Manual Test. This parameter is fixed to 1 for Automatic Test.

Table 5-47 [Configuration: Test Condition] Screen Input Field

Input Field	Description
AUTH Key	Sets the type of Authentication Key to "ORG", "STD", or "USER". • ORG: Sets it to Test USIM provided by Agilent. • STD: Sets it to the specified value of 3GPP. • USER: Sets the type of USIM to others. A default value for each type is as follows. • ORG: 00112233445566778899AABBCCDDEEFF • STD: 4147494C454E5420544543484E4F0000 • USER: 4147494C454E5420544543484E4F0000 For Test USIM (p/n:1150-8007) used "STD" For Test USIM (p/n:E5515-10007/10008) used "USER" Authentication Key can be set by remote control only when the Key is set to "USER". Refer to N9360-90703 *Agilent N9360A Multi UE Tester W-CDMA Programming Manual* for details.
LO/HI Limit	Sets Pass/Fail acceptance values of RF test. Refer to "Setting Measurement Limits on Measurement Items" on page 5-160 in the following section.

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

Setting Measurement Limits on Measurement Items

The "LO Limit" and "HI Limit" values for the measurement items in Table 5-48 need to be set to execute Pass/Fail tests with Automatic Test, Manual Test and TX Analyzer. Limits can be specified in all measurement items of test set on the [Configuration: Test Sequence] screen (even if some test items are skipped).

The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

Table 5-48 [Configuration: Test Condition] Screen Test Limits

Measurement Items	Description
Open Loop TX Power	Sets a high and a low test limit. The allowable range is from -99.9 to +99.9dBm in 0.1dB steps.
ILP (Down Min)	Sets a high and a low test limit. The allowable range is from -99.99 to +99.99dB in 0.01 dB steps.
ILP (Down Max)	Sets a high and a low test limit. The allowable range is from -99.99 to +99.99dB in 0.01 dB steps.

Table 5-48 [Configuration: Test Condition] Screen Test Limits

Measurement Items	Description
ILP (Up Min)	Sets a high and a low test limit. The allowable range is from -99.99 to +99.99dB in 0.01 dB steps.
ILP (Up Max)	Sets a high and a low test limit. The allowable range is from -99.99 to +99.99dB in 0.01 dB steps.
ILP (10 Slots Down)	Sets a high and a low test limit. The allowable range is from -99.99 to +99.99dB in 0.01 dB steps
ILP (10 Slots Up)	Sets a high and a low test limit. The allowable range is from -99.99 to +99.99dB in 0.01 dB steps
MAX TX Power	Sets a high and a low test limit. The allowable range is from -99.99 to +99.99dBm in 0.01 dB steps
Frequency Error	Sets a high and a low test limit over the active part of the timeslot. The allowable range is from -999.9 to +999.9Hz in 0.01Hz steps.
EVM	Sets a high limit. The allowable range is 0.00 to 99.99% in 0.01% steps.
Origin Offset	Sets a high limit. The allowable range is -99.99 to 0.00dB in 0.01dB steps.
Sensitivity/BER	Sets a high limit. The allowable range is 0.00 to 99.99 % in 0.01 % steps.
MIN	TX PowerSets the low and high limits of minimum TX power. The allowable range is -99.99 to +99.99 dBm in 0.01 dB steps.
ACLR DSB 5 MHz	Sets a high limit. The allowable range is -99.99 to +0.00 dB in 0.01 dB steps. This is displayed when the Option W07 is installed in the Tester.
ACLR DSB 10 MHz	Sets a high limit. The allowable range is -99.99 to +0.00 dB in 0.01 dB steps. This is displayed when the Option W07 is installed in the Tester.
OBW	Sets a high limit. The allowable range is 0.00 to -9.99 MHz in 0.01 MHz steps. This is displayed when the Option W07 is installed in the Tester.

W-CDMA Mode is set to HSDPA

Screen Field

The following input fields need to be set in order to initiate Test Conditions. The descriptions of the fields are listed in Table 5-49.

Table 5-49 [Configuration: Test Condition] Screen Input Field

Input Field	Description
Current system	Displays an active Tester. Selects a test mode from "GSM", "W-CDMA" and "CDMA2000". GSM is valid when G00 Option is installed in the Tester. CDMA2000 is valid when cdma2000 Option is installed in the Tester.
W-CDMA Mode	Selects W-CDMA Mode from W-CDMA or HSDPA. This item is selectable only when the Option W06 is installed and valid 3GPP system is existing in the Tester.
Band	Sets a band to 1 or 6. This setting is for Manual Test, TX Analyzer and Signal Generator.
3GPP System	Selects 3GPP version and the protocol. This parameter is fixed to 4.
Signaling Pattern †	Sets a signaling pattern. The allowable range is from 1 to 255 in 1 step. Select 1 at present because settings over 2 will be extended in future.
BS Level †	Sets a RF output level for selected band. This setting is for Manual Test, TX Analyzer and Signal Generator. Also, this setting can be done on the each test screen. The allowable range is from -115.0 to -18.0 dBm in 0.1 dB step.
Meas. Type †	Sets measurement period mode and measurement period number. Measurement period mode is selected from TTI and CQI. Allowable range of measurement period number is from 1 to 100000 in 1 step. • TTI Measurement period is defined by the TTI period shown by the measurement period number. The parenthesized value is calculated by "measurement value * 2ms". • CQI Measurement period is defined by how long it takes before attaining the CQI reporting value shown by the measurement period number.
H-ARQ retrans	Sets the time of retransmission of H-ARQ. Select 1 or 4.
Data	Sets the HSDPA transmission data. This parameter is fixed to "PN15".
TPC Algorithm	Sets the algorithm of power control to 1 or 2 for Manual Test. This parameter is fixed to 1 for Automatic Test.

Table 5-49 [Configuration: Test Condition] Screen Input Field

Input Field	Description
AUTH Key	Sets the type of Authentication Key to "ORG", "STD", or "USER". • ORG: Sets it to Test USIM provided by Agilent. • STD: Sets it to the specified value of 3GPP. • USER: Sets the type of USIM to others. The default value for each type is as follows. • ORG: 00112233445566778899AABBCCDDEEFF • STD: 4147494C454E5420544543484E4F0000 • USER: 4147494C454E5420544543484E4F0000 For Test USIM (p/n:1150-8007) used "STD" For Test USIM (p/n:E5515-10007/10008) used "USER" Authentication Key can be set by remote control only when Authentication Key is set to "USER". Refer to the "*N9360A Multi UE Tester W-CDMA Pragramming Manual*" for details.
LO/HI Limit	Sets Pass/Fail acceptance values of RF test. Refer to "Setting Measurement Limits on Measurement Items" on next page.

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

Setting Measurement Limits on Measurement Items

The "LO Limit" and "HI Limit" values for the measurement items in Table 5-50 need to be set to execute Pass/Fail tests with Manual Test. Limits can be specified in all measurement items of test set on the [Configuration: Test Sequence] screen (even if some test items are skipped).

The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

Table 5-50 [Configuration: Test Condition] Screen Test Limits

Measurement Items	Description
Throughput R	Sets the low test limit. The allowable range is from 0 to 99999kbps in 1kbps step.
Median CQI	Sets the high and low test limit, The allowable range is from 0 to 30 in 1 step.
CQI variance	Sets the low test limit. The allowable range is from 0.00 to 99.99% in 0.01% step.

Configuration: Test Condition (Loss)

When the Loss softkey is pressed, [Configuration: Test Condition (Loss)] as Figure 5-58 is displayed.

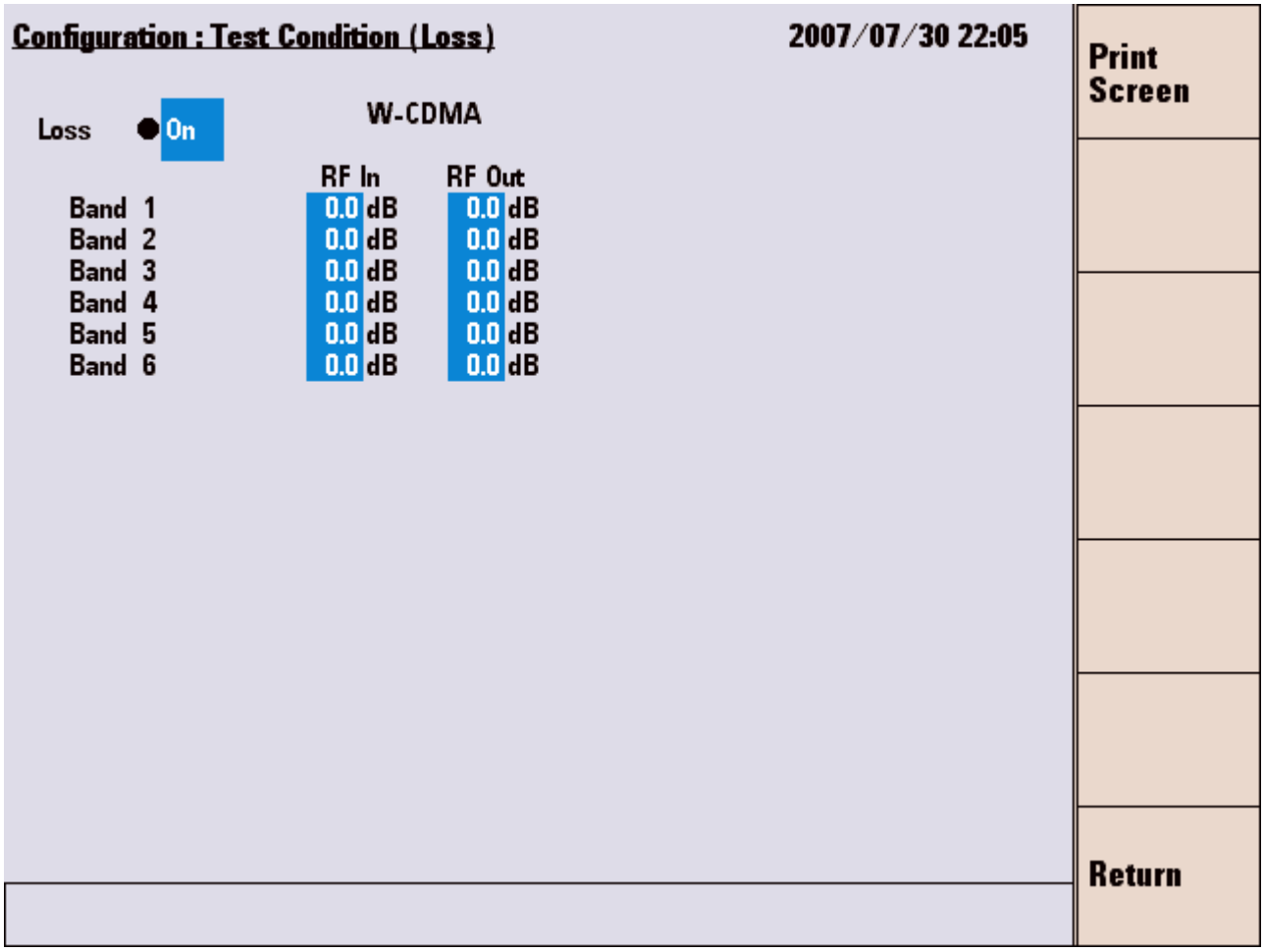


Figure 5-58 [Configuration: Test Condition (Loss)] Screen

Softkey Menu Field

Softkey Menu

Print Screen: Prints a hardcopy of the screen or saves a graphic file of the screen in a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

Return: Returns to [Configuration] screen.

Screen Fields

Set the input fields in the screen field according to the following description of Table 5-51 to execute a new test.

Table 5-51 [Configuration: Test Condition (Loss)] Screen Input Field

Input Field	Description

Loss †	Sets the path losses caused by the coupler or cable used to connect the RF signals from/to the mobile phone with each radio systems, respectively.
	• Selects "On" or "Off".
	  • On: Adds a set path loss value of RF In/Out. Select "On" to activate the change of ATT setting on the [Configuration: Test Sequence] screen.
	  • Off: Not add the path loss value.
	• Depending on transmitter testing and receiver testing, set loss values in the "RF In" and "RF Out" fields as follows:
	  • RF In: Sets the traffic channel loss values for transmitter testing. The allowable range is from 0.0 to 99.9 dB in 0.1 dB steps.
	  • RF Out: Sets the traffic channel loss for receiver testing. The allowable range is from 0.0 to 99.9 dB in 0.1 dB steps.
	The sum of Loss setting value and ATT setting value has some limitation. Refer to"Actual Input/Output Level and Correction" on page 4-19.

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

Configuration: File Management

When the **File Management** softkey on the [Configuration] screen is pressed, the screen as Figure 5-59 is displayed. All parameter files are listed in the table.

You can save/recall a parameter file in/from the following two devices:

- A USB memory device
- HDD in the Tester

Select the device you want to use by pressing the **HDD/USB** softkey.

NOTE If you use a USB memory device, insert a proper USB memory device into the USB Connector on the front panel of the Tester.

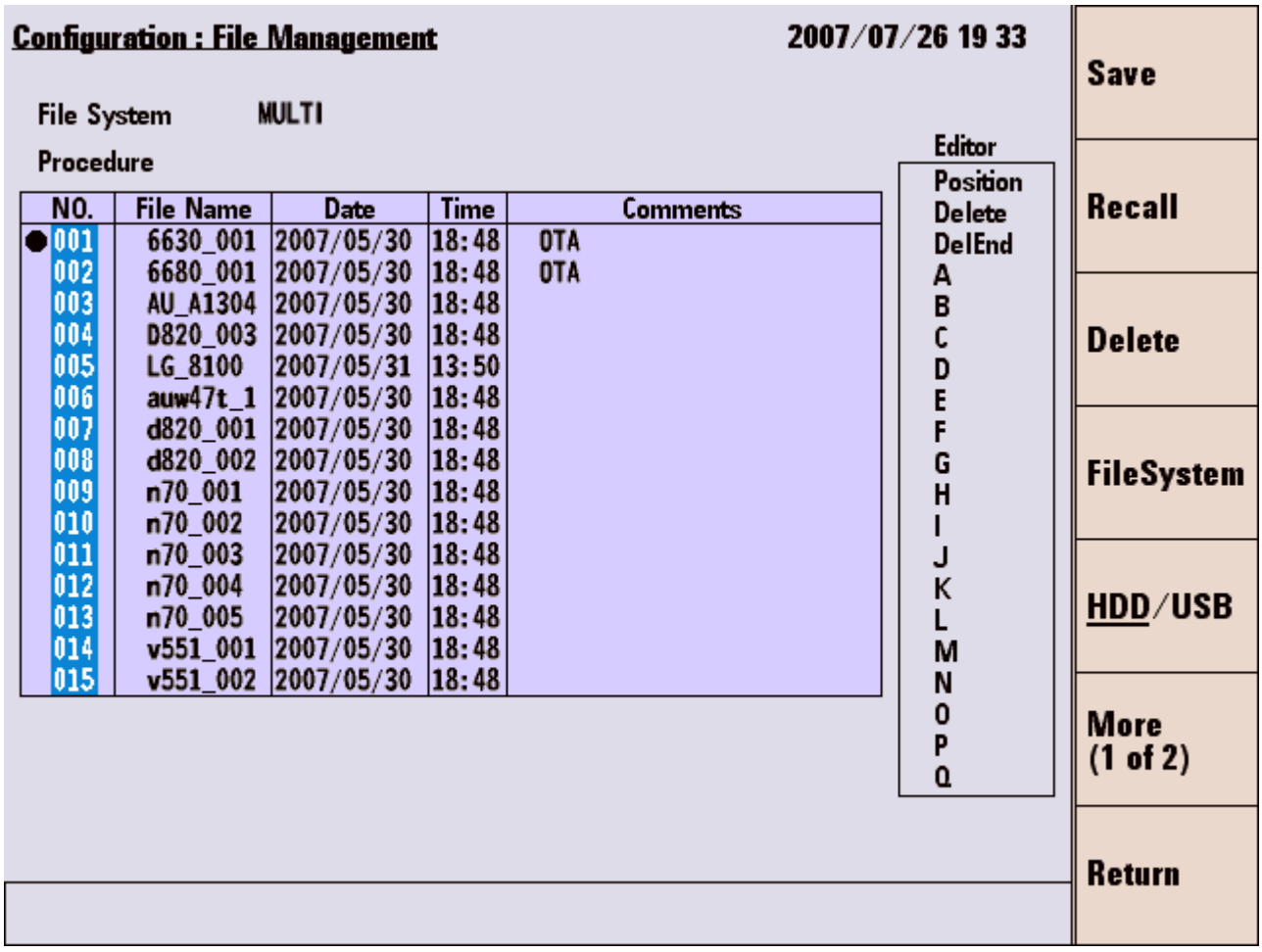


Figure 5-59 [Configuration: File Management] Screen

Softkey Menu Field

Softkey Menu 1

Save: Saves a file including all test parameters which are currently set into the HDD or a USB memory device. Refer to "Saving Test Setup File" on page 5-171.

Recall: Recalls one of a test parameter file from the HDD or a USB memory device into the Tester. Refer to "Recalling Test Setup File" on page 5-176.

Delete: Deletes a test parameter file selected by the CURSOR CONTROL knob. Refer to "Deleting Test Setup File" on page 5-180.

File System: Selects file system from "MULTI", "GSM" (previous revision format) or "W-CDMA" (previous version format). When you save a test parameter file containing the cdma2000 system information, select the "MULTI".

HDD/USB: Selects the HDD in the Tester or a USB memory device.

More (1 of 2): Displays the softkey menu 2.

Return: Returns to the [Configuration] screen.

Softkey Menu 2

Print Screen: Prints a hardcopy of the screen or saves an image file of the screen into a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

File Replace HDD > USB: This softkey is displayed when "HDD" is selected with the HDD/USB softkey. Displays the File Replace screen when this softkey is pressed. Refer to "Replacing Test Setup Files (HDD is selected)" on page 5-183. This softkey is available when the following conditions are met.

- A USB memory device is inserted into the Tester.
- Test setup file is saved in the HDD.

File Replace HDD < USB: This softkey is displayed when "USB" is selected with the HDD/USB softkey. Displays the File Replace screen when this softkey is pressed. Refer to "Replacing Test Setup Files (USB Memory Device is selected)" on page 5-185. This softkey is available when the following conditions are met.

- A USB memory device contained the test setup file is inserted into the Tester.

Undo: Displays the screen to confirm Undo (operation cancels) Refer to "Undo Confirmation (HDD is selected)" on page 5-186 and "Undo Confirmation (USB Memory Device is selected)" on page 5-188. This softkey is available when the following conditions are met.

- Replace files are existed in the HDD when the HDD is selected.
- Replace files are existed in the USB memory device, when a USB memory device is selected.

More (2 of 2): Returns to the softkey menu 1.

Message Field

When an error occurs during file copying, the following message is displayed in the message field.

Table 5-52 Error Message in File Management

Message	Content
Procedure file Copy failure! [0000]	Copy is failed.
Procedure file Copy failure! [0001]	Delete is failed.
Procedure file Copy failure! [0002]	Rename is failed.

Saving Test Setup File

1 If you save a file including all parameters that are currently set in a USB memory device, go to step 2. Or, go to step 3 to save a file in the HDD.

2 Insert a USB memory device into the USB Connector on the front panel of the Tester.

3 Select a device you want to use to save a test parameter file by pressing the **HDD/USB** softkey. The selected device, either "HDD" or "USB", is underlined.

4 Move the cursor to the file number to which you want to save a new test parameter file.

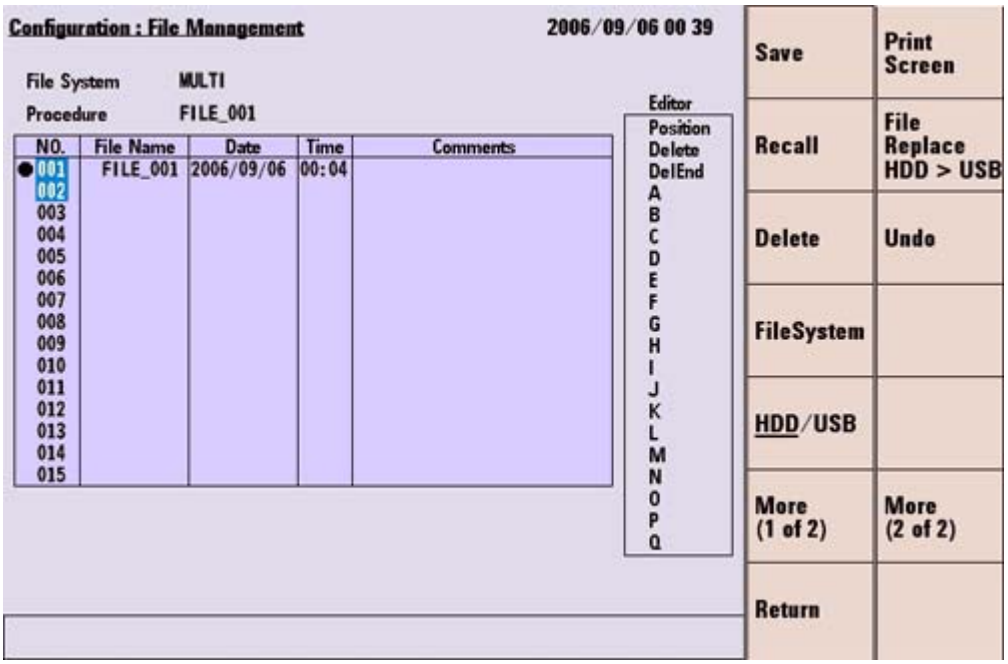


Figure 5-60 [Configuration: File Management] Save-1 Screen

5 Press the **Save** softkey. The "Filename" and "Comment" fields are highlighted, and the cursor is placed at the "Filename" field. At this time, a default file name is automatically displayed in the "Filename" field. If you want to change the file name, go to step 6. If you do not want to change the file name, go to step 9.

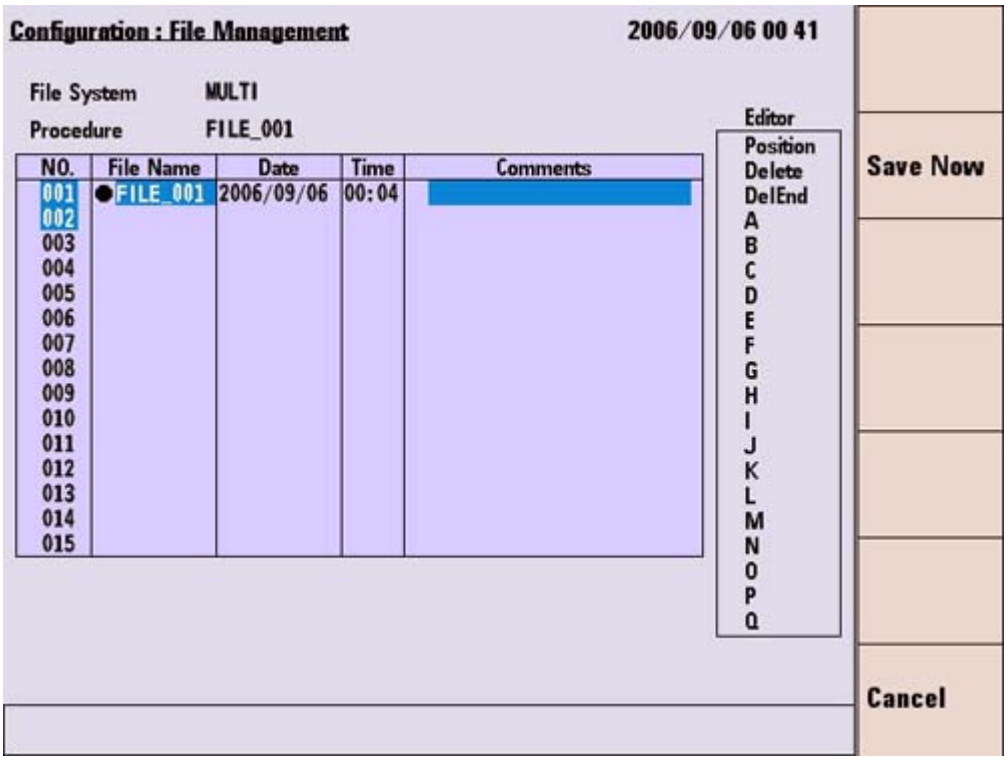


Figure 5-61 [Configuration: File Management] Save-2 Screen

Softkey Menu Field

Softkey Menu 1

Save Now: Saves the parameter file in the HDD or USB memory device. Press this softkey after entering a filename and comment.

Cancel: Cancels saving and returns to the screen in Step 4.

6 Press the CURSOR CONTROL knob once to activate the "Editor" scrolling field. The rectangular cursor is placed at the first position of the "Filename" field enabling you to entry the first character of a filename.

7 Selects alphanumeric characters and other symbols by rotating and pressing the CURSOR CONTROL knob to edit a filename.

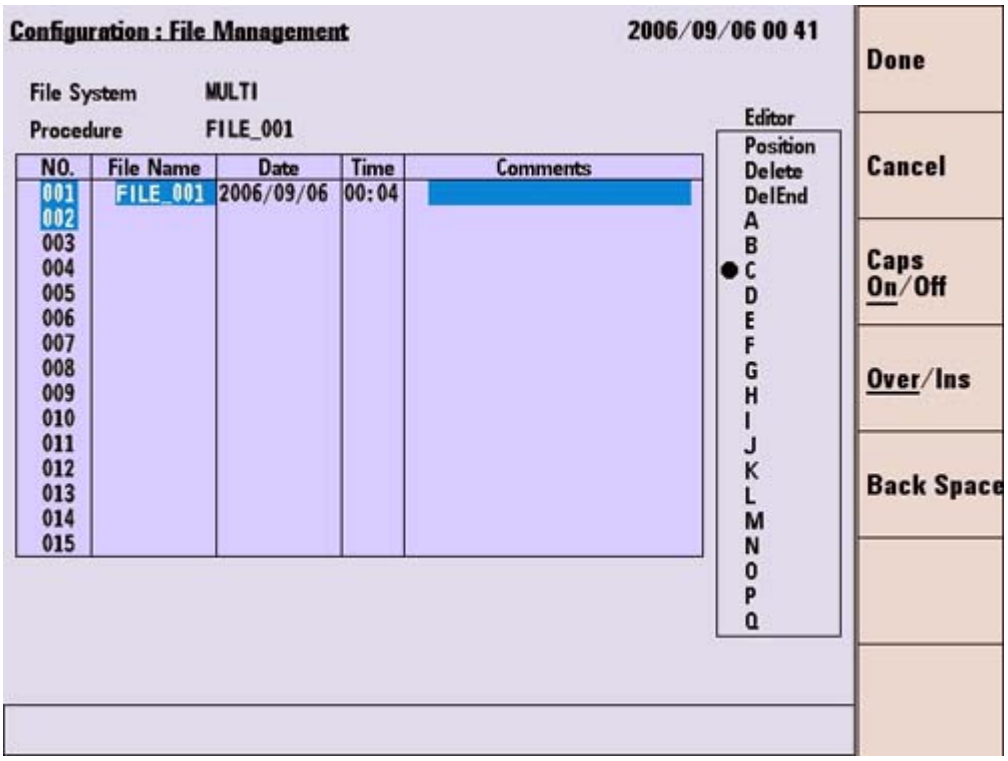


Figure 5-62 [Configuration: File Management] Save-3 Screen

Softkey Menu Field

Softkey Menu 1

Done: Determines the words entered.

Cancel: Cancels editing.

Caps On/Off: Selects upper case or lower case of characters.

On: Selects upper case characters

Off: Selects lower case characters

Over/Ins: Selects "Over" (overwrite) or "Ins" (insert).

- "Over": Overwrites (erase and replace) characters selected.
- “Ins": Inserts characters at the position of the rectangular cursor without erasing the existing characters.

Back Space: Erases an alphanumeric character at the left side of the rectangular cursor.

8 Press the **Done** softkey to enter the filename edited.

9 Move the cursor to the "Comment" field and press it once. The rectangular cursor is placed at the first position of the "Comment" field enabling you to enter the first character of a comment. Create the comment with similar operation to that for editing a filename. Refer to step 7 and step 8 to complete entering a comment.

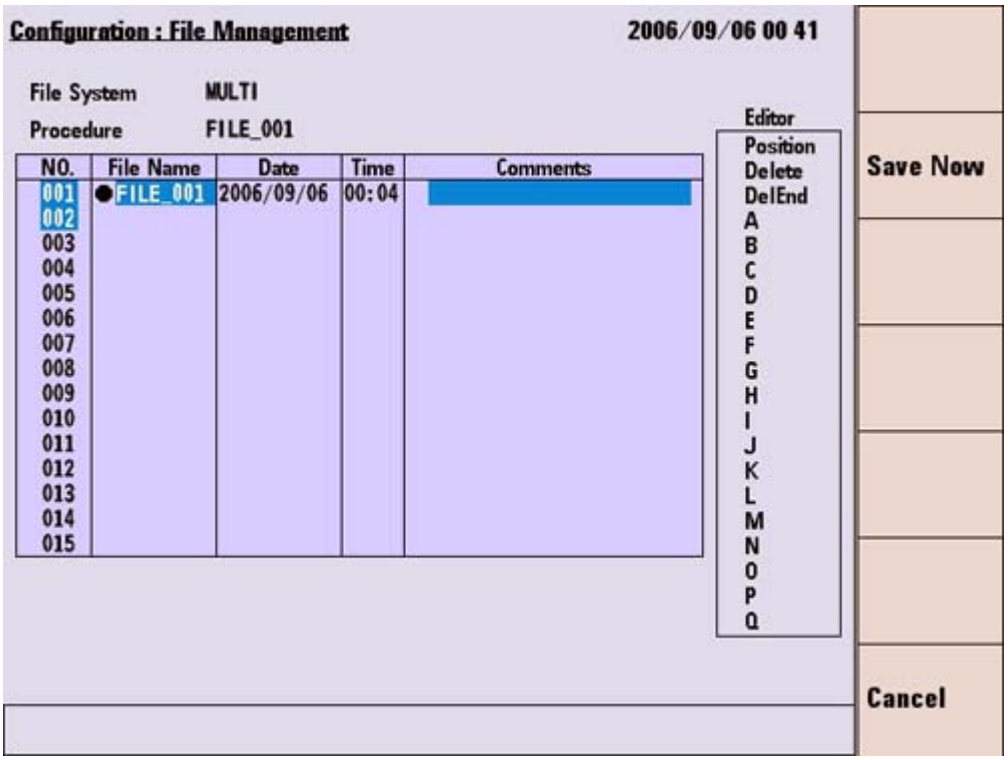


Figure 5-63 [Configuration: File Management] Save-4 Screen

Softkey Menu Field

Softkey Menu 1 S

Save Now: Executes saving.

Cancel: Cancels entering and returns to the screen in step 5.

10 After entering the new file name and comment, press the **Save Now** softkey to execute saving.

11 If saving is properly done, the new filename should be displayed in the filename table with the Date and Time data that are automatically taken from the internal clock of the Tester.

NOTE

Remove the USB memory device after returning to the [Configuration] screen by pressing the **Return** softkey.

The USB memory device should not be removed while the [File Management] screen is displayed. Otherwise, the test parameter files may be damaged.

Confirmation message as Figure 5-64 is displayed when you select an existing file and save it as the same file name.

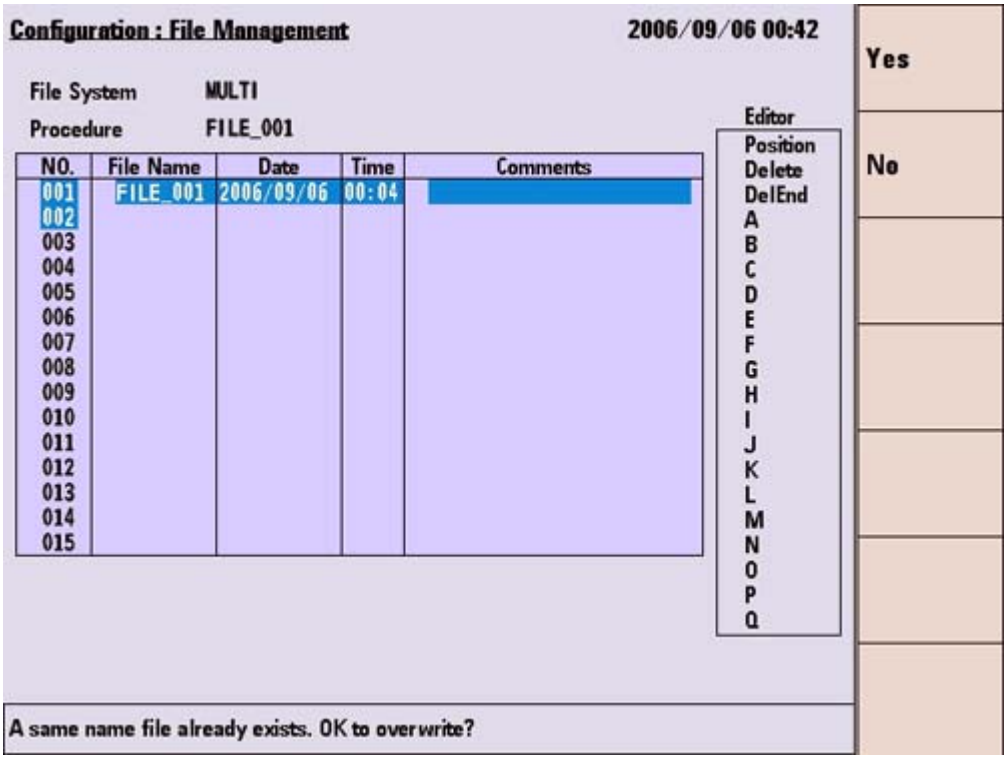


Figure 5-64 [Configuration: File Management] Overwrite Screen

Softkey Menu Field

Softkey Menu 1

Yes: Executes saving the parameter file.

No: Returns to the condition before selecting the file.

Message field

"A same name file already exists. Ok to save?"

Recalling Test Setup File

1. If you recall a file including test parameters from a USB memory device, go to step 2. Or, go to step 3 to recall a file from the HDD.
2. Insert a USB memory device into the USB Connector on the front panel of the Tester.
3. Select a device you use to recall a test parameter file by pressing the **HDD/USB** softkey. The selected device, either "HDD" or "USB", is underlined.
4. Move the cursor to the file number of which you want to recall the test parameter file.

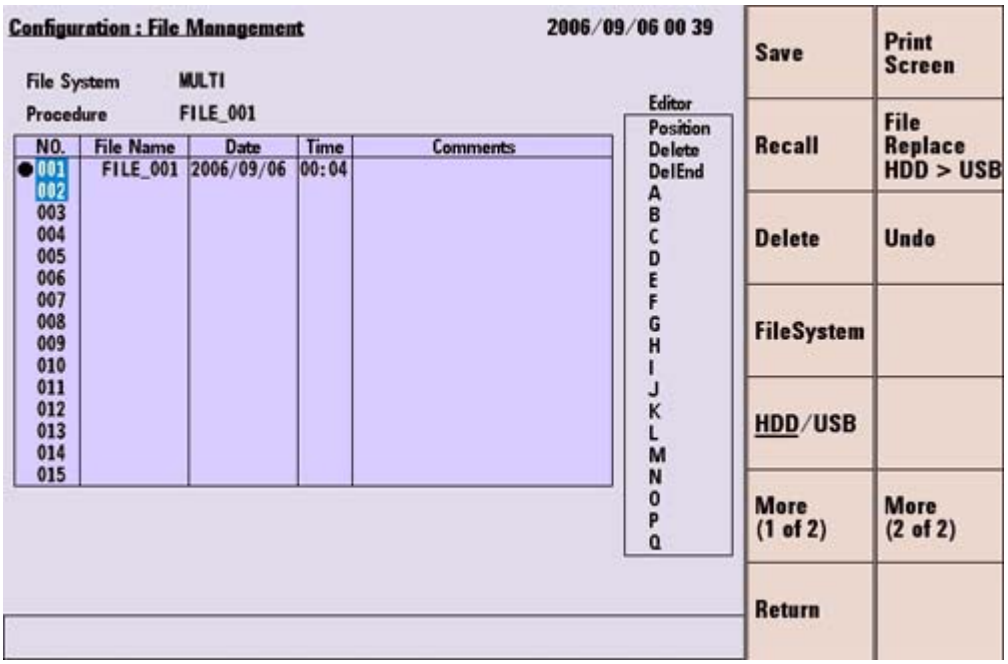


Figure 5-65 [Configuration: File Management] Recall-1 Screen

5 Press the **Recall** softkey. And then, the "Filename", "Date", "Time" and "Comment" fields are highlighted.

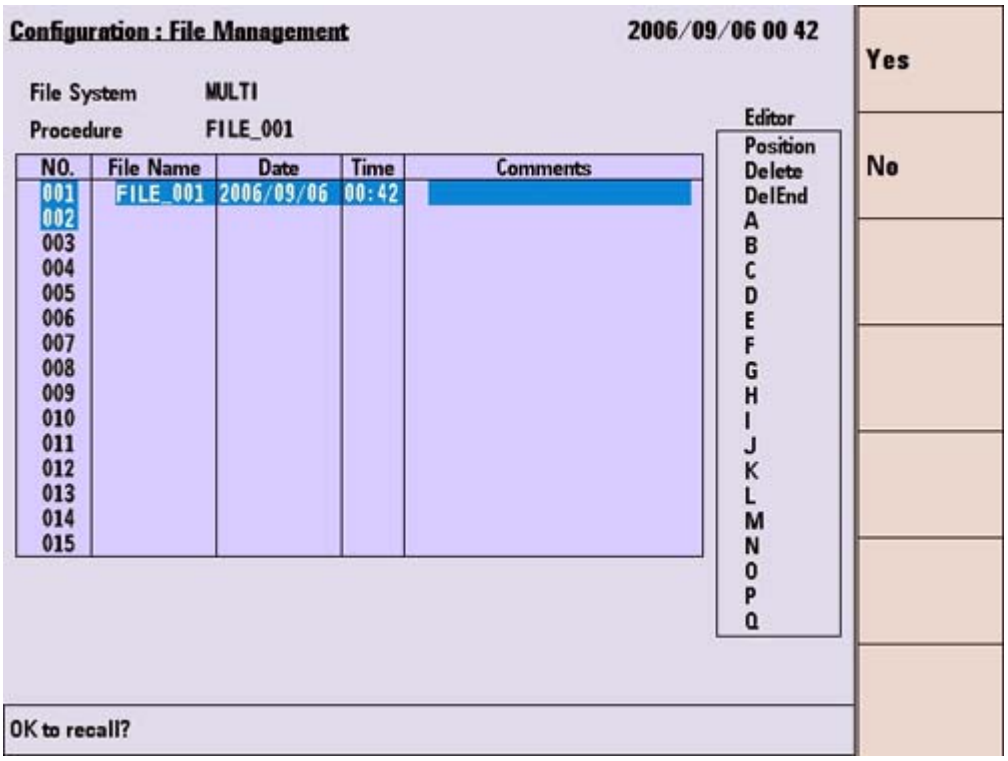


Figure 5-66 [Configuration File Management] Recall-2 Screen

Softkey Menu Field

Softkey Menu 1

Yes: Executes restoring the parameter file.

No: Cancels recalling the parameter file and returns to Step 4.

6 Respond to the operation message "Ok to recall?" in the message field by pressing the **Yes** softkey. If there is something to revise, press the **No** Softkey to go back to step 4.

7 If the file is correctly recalled to the Tester, the "Procedure:" field above the table shows the filename. The cursor is placed next to the file number. The softkey menu returns to the initial menu as Figure 5-67.

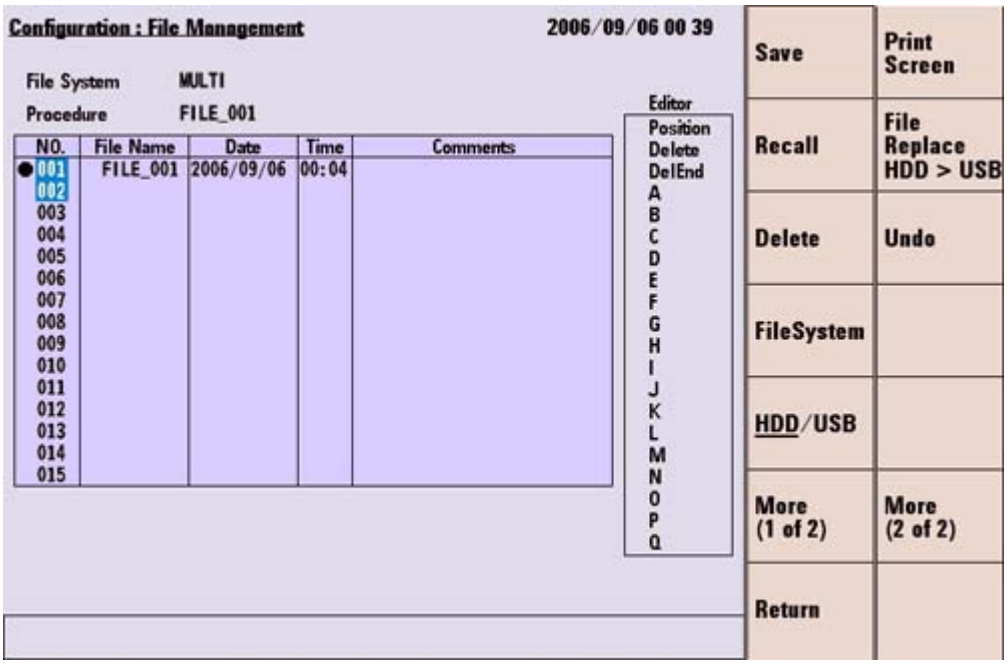


Figure 5-67 [Configuration File Management] Recall-3 Screen

NOTE

Remove the USB memory device after returning to the [Configuration] screen by pressing the **Return** softkey.

The USB memory device should not be removed while the [File Management] screen is displayed. Otherwise, the parameter files may be damaged.

Deleting Test Setup File

1 To delete a file containing test parameters from a USB device, go to step 2. Otherwise, go to step 3 to deleted from the HDD.

2 Insert a USB memory device into the USB connector to obtain the parameter file list.

3 Select a device from which you want to delete a test parameter file by pressing the **HDD/USB** softkey. The selected device, either "HDD" or "USB", is underlined.

4 Move the cursor to the file number of which you want to delete the test parameter file.

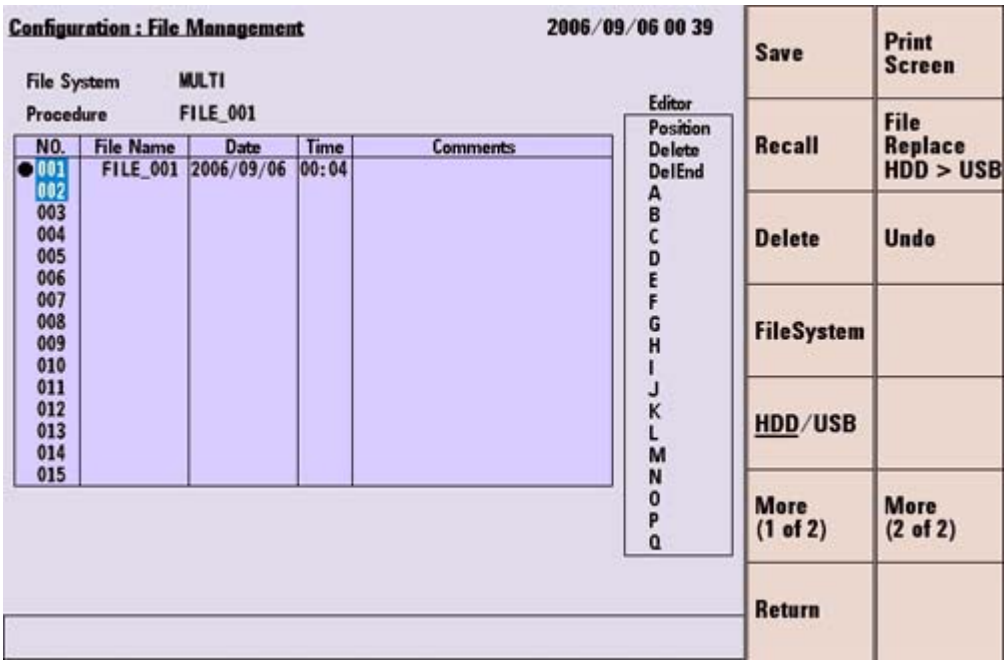


Figure 5-68 [Configuration File Management] Delete-1 Screen

5 Press the **Delete** softkey, and then the "Filename", "Date", "Time" and "Comment" fields are highlighted.

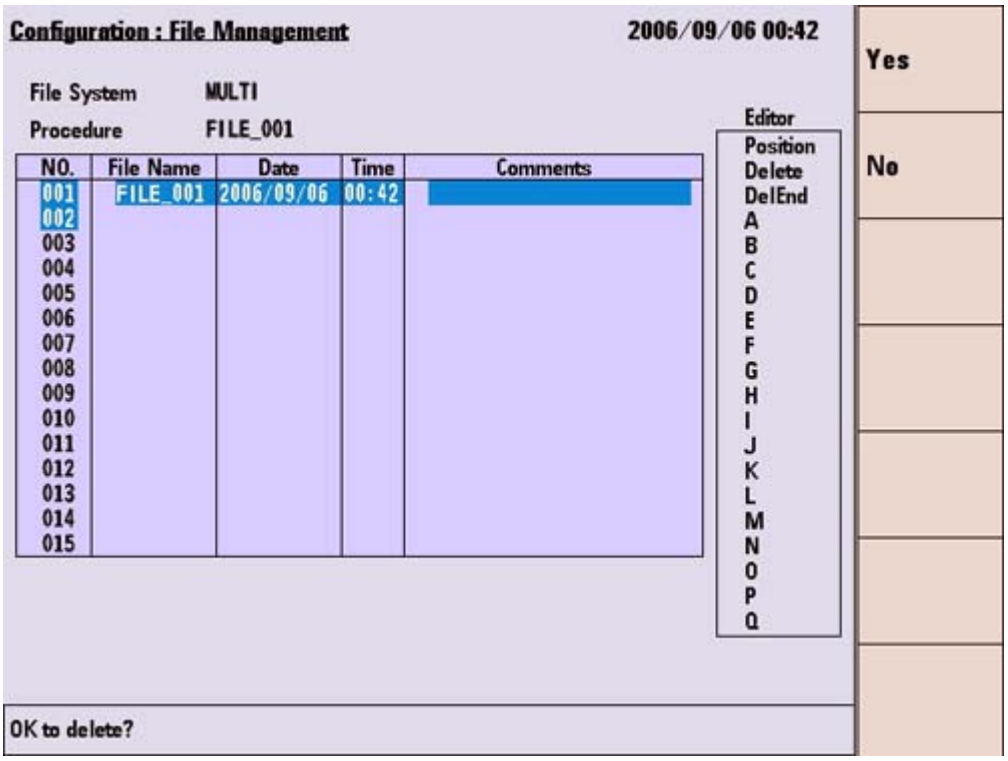


Figure 5-69 [Configuration File Management] Delete-2 Screen

Softkey Menu Field

Softkey Menu 1

Yes: Executes deleting the parameter file.

No: Cancels deleting the parameter file and returns to step 4.

6 Respond to the operation message "Ok to delete?" in the message field by pressing the **Yes** softkey. Or, press the **No** softkey to go back to step 4.

7 When deleting is properly done, the file disappears and the softkey menu returns to the initial menu.

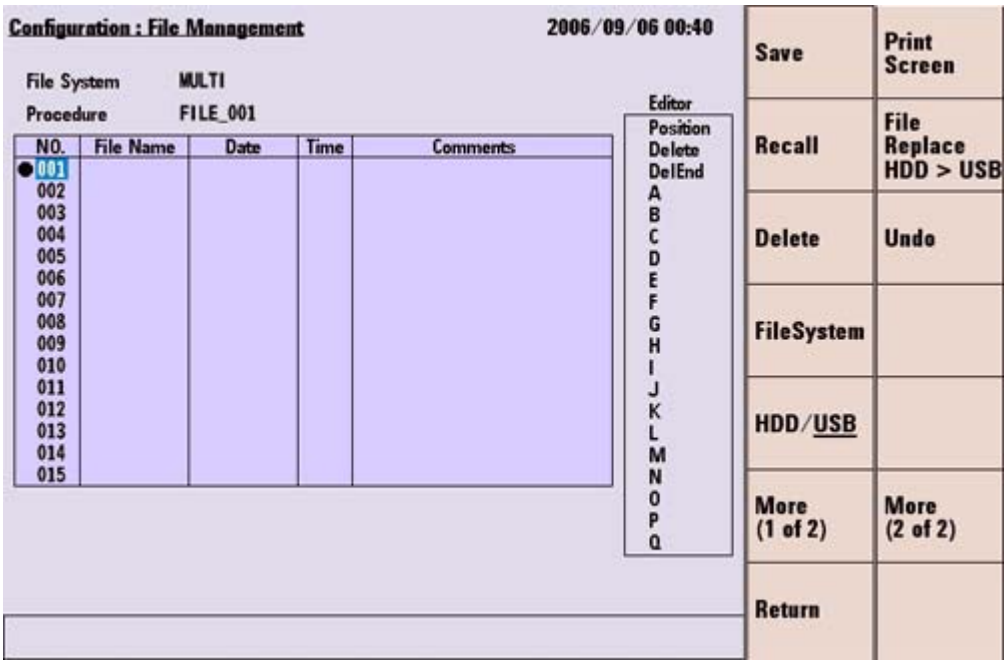


Figure 5-70 [Configuration File Management] Delete-3 Screen

NOTE

Remove the USB memory device after returning to the [Configuration] screen by pressing the **Return** softkey.

The USB memory device should not be removed while the [File Management] screen is displayed. Otherwise, the parameter files may be damaged.

Replacing Test Setup Files (HDD is selected)

When copying all the test parameter files to a USB memory device, select the "HDD" with the **HDD/USB** softkey, and then, press the **More (1 of 2)** and **File Replace HDD > USB** softkeys on the [Configuration: File Management] screen. Then, the File Replace Screen (HDD is selected) shown in Figure 5-71 is displayed.

NOTE After this operation, all existing test parameter files in the USB memory device are deleted.

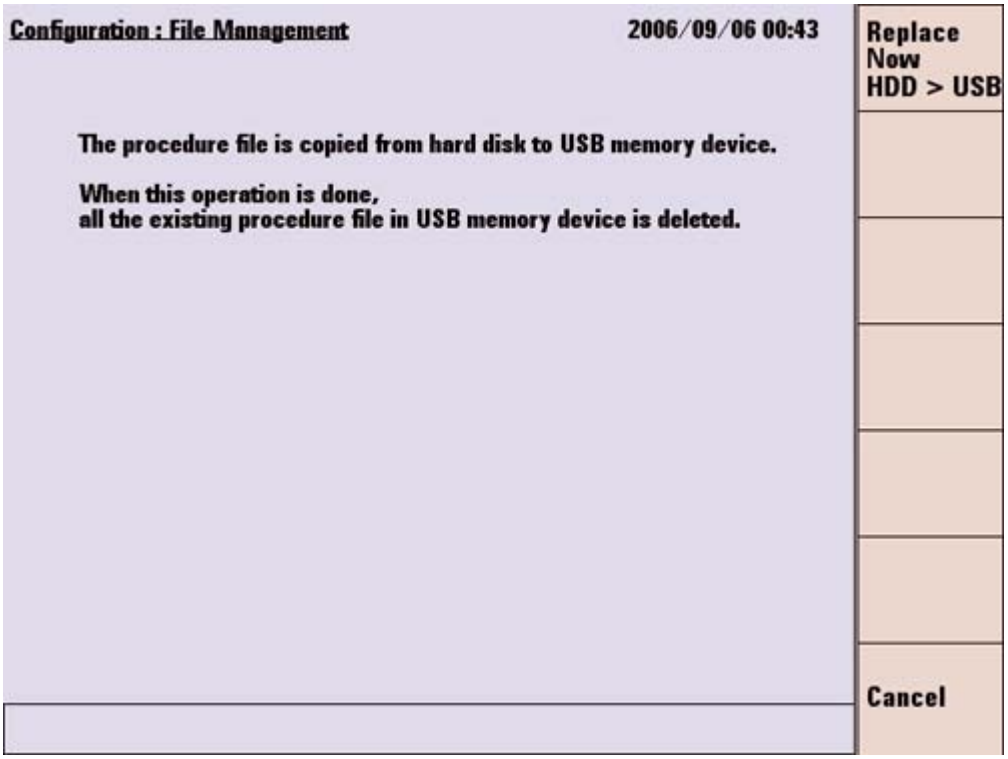

Configuration : File Management
2006/09/06 00:43
The procedure file is copied from hard disk to USB memory device.
When this operation is done,
all the existing procedure file in USB memory device is deleted.
Replace Now HDD > USB
Cancel

Figure 5-71 File Replace Screen (HDD is selected)

Softkey Menu Field

Softkey Menu 1

Replace Now HDD > USB: Copies all the test parameter files from the HDD to a USB memory device.

Cancel: Cancels copying and returns to the [Configuration: File Management] Screen as Figure 5-59 on page 5-168.

Screen Field

The following message is displayed in the screen field.

"The selecting procedure file is copied from the hard disk to a USB memory device. When this operation is done, all existing procedure files in the USB memory device are deleted."

NOTE

Can restore all replaced files using the Undo function when you replace all test parameter files from the HDD to a USB memory device. Refer to "Undo Confirmation (USB Memory Device is selected)" on page 5-188 for details.

If copying operation is failed, the [File Management] screen is displayed and an error message is displayed in the message field. Refer to Table 5-52, "Error Message in File Management," on page 5-170.

Replacing Test Setup Files (USB Memory Device is selected)

When copying all the test parameter files to the HDD, select "USB" with the HDD/USB softkey, and then, press the **More (1 of 2)** and **File Replace HDD < USB** softkeys on the [Configuration: File Management] screen. The File Replace Screen (USB memory device is selected) shown in Figure 5-72 is displayed.

NOTE After this operation, all existing test parameter files in the HDD are deleted.

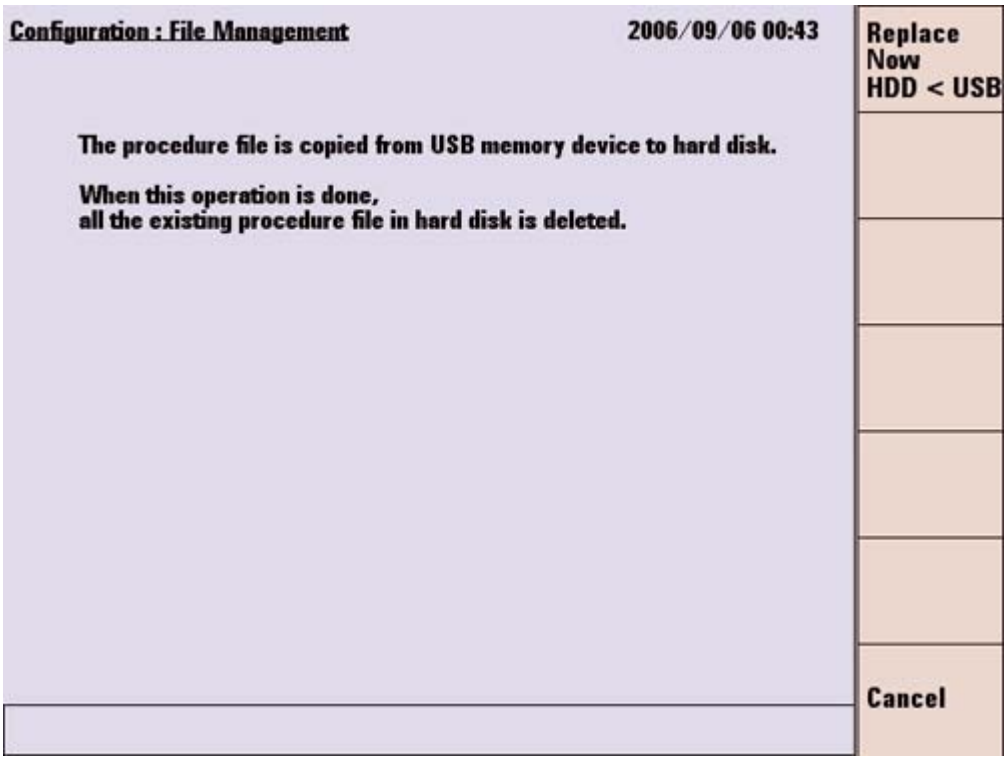

Configuration : File Management
2006/09/06 00:43
The procedure file is copied from USB memory device to hard disk.
When this operation is done,
all the existing procedure file in hard disk is deleted.
Replace Now HDD < USB
Cancel

Figure 5-72 File Replace Screen (USB memory device is selected)

Softkey Menu Field

Softkey Menu 1

Replace Now HDD < USB: Copies all the test parameter files from the USB memory device to the HDD.

Cancel: Cancels copying and returns to the [Configuration: File Management] Screen as Figure 5-59 on page 5-168.

Screen Field

The following message is displayed in the screen field.

"The selecting procedure file is copied from a USB memory device to the hard disk. When this operation is done, all existing procedure files in hard disk are deleted."

NOTE

Can restore all replaced files using the Undo function when you replace all test parameter files from the HDD to a USB memory device. Refer to "Undo Confirmation (HDD is selected)" on page 5-186 for details.

If copying operation is failed, the [File Management] screen is displayed and an error message is displayed in the message field. Refer to Table 5-52, "Error Message in File Management," on page 5-170.

Undo Confirmation (HDD is selected)

You can restore all replaced files using Undo function when you replaced all the test parameter files from a USB memory device to the HDD. Select the "HDD" with the **HDD/USB** softkey, and then, press the **More (1 of 2)** and **Undo** softkeys on the [Configuration: File Management] screen. Undo Screen (HDD is selected) shown in Figure 5-73 is displayed.

NOTE

After this operation, all existing test parameter files in the HDD are deleted.

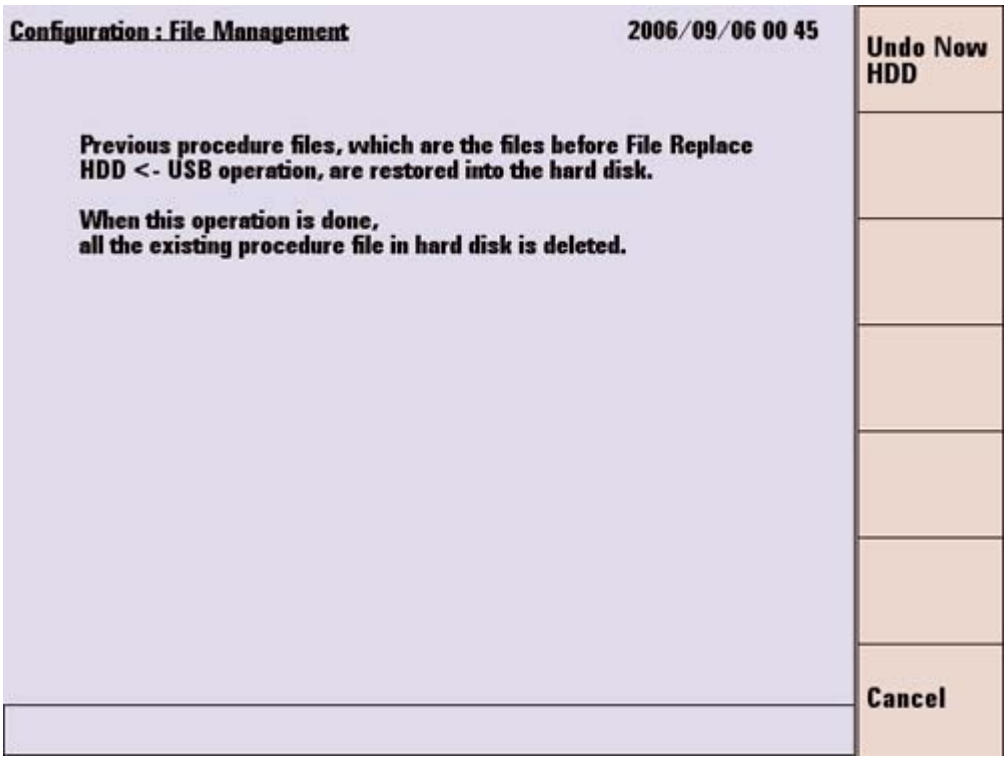

Configuration : File Management
2006/09/06 00 45
Previous procedure files, which are the files before File Replace HDD <- USB operation, are restored into the hard disk.
When this operation is done, all the existing procedure file in hard disk is deleted.
Undo Now HDD
Cancel

Figure 5-73 Undo Screen (HDD is selected)

Softkey Menu

Undo Now HDD: Undo a parameter file the hard disk to the last condition (before copy).

Cancel: Cancels File Replace operation and returns to the File Management screen as Figure 5-59.

Screen Field

The following message is displayed in the screen field.

"Previous procedure files, which are the files before File Replace HDD <- USB operation, are restored into the hard desk. When this operation is done, all existing procedure files in the hard disk are deleted."

Undo Confirmation (USB Memory Device is selected)

You can restore all replaced files using Undo function when you replaced all the test parameter files from the HDD to a USB memory device. Select the "USB" with the **HDD/USB** softkey, and then, press the **More (1 of 2)** and **Undo** softkeys on the [Configuration: File Management] screen. Undo Screen (USB memory device is selected) shown in Figure 5-74 is displayed.

NOTE After this operation, all existing test parameter files in the USB memory device are deleted.

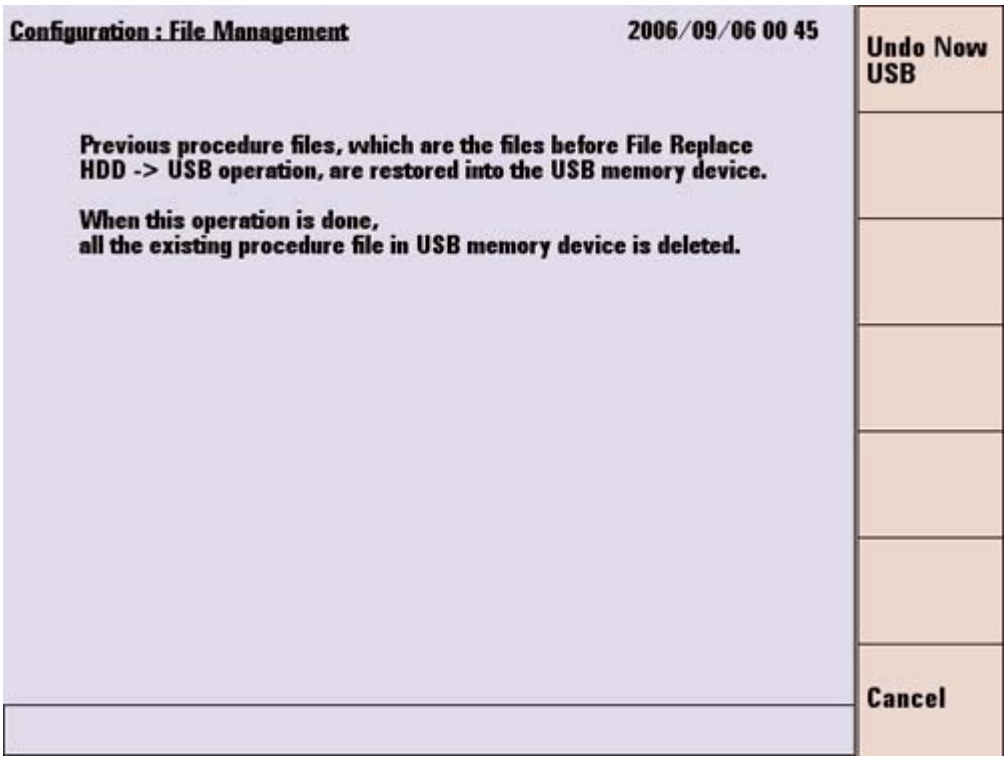

Configuration : File Management
2006/09/06 00 45
Previous procedure files, which are the files before File Replace
HDD -> USB operation, are restored into the USB memory device.
When this operation is done,
all the existing procedure file in USB memory device is deleted.
Undo Now
USB
Cancel

Figure 5-74 Undo Screen (USB memory device is selected)

Softkey Menu

Undo Now USB: Restores all the parameter files in the USB memory device before the file replace operation was executed. After this operation, all existing test parameter files in the USB memory device are deleted.

Cancel: Cancels File Replace operation and returns to the File Management screen as Figure 5-59.

Screen Field

The following message is displayed in the screen field.

"The procedure file is undoing old files in the USB memory device. When this operation is done, all the existing procedure files in the USB memory device is deleted."

Configuration: Network Setting

When the **Network Setting** softkey on the [Configuration] screen is pressed, the [Configuration: Network Setting] Screen as Figure 5-75 is displayed.

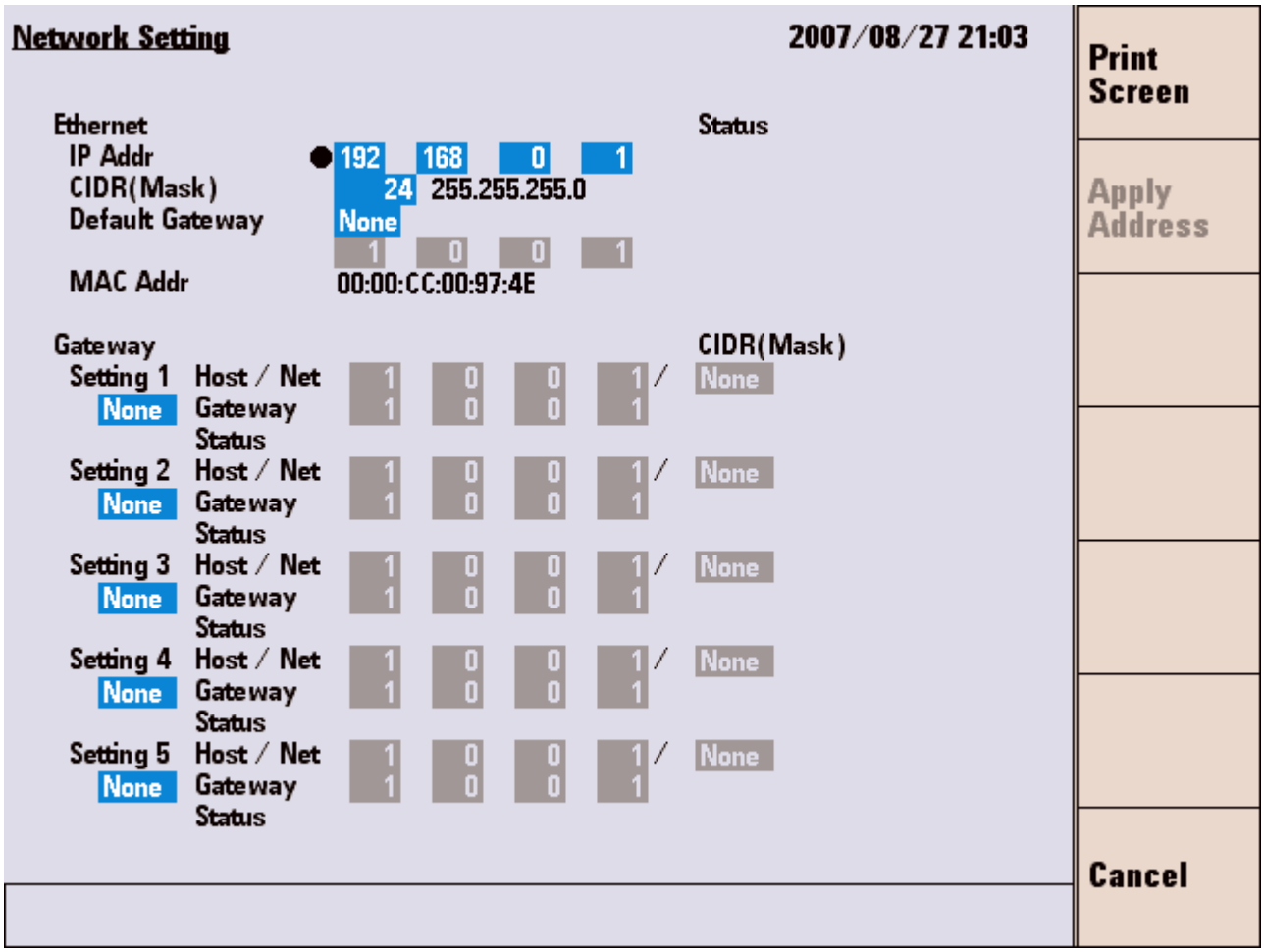


Figure 5-75 [Configuration: Network Setting] Screen

Softkey Menu Field

Softkey Menu 1

Print Screen: Prints a hardcopy of the screen or stores the screen image in a USB memory device, according to the "Printer" field on the [Configuration] screen.

Apply Address: Applies the changes of "IP Addr", "Mask", "Default Gateway", "Host/Net", "Gateway", and "CIDR" to the Tester. This softkey is not activated when the [Network Setting] screen is displayed and no setting is changed. This softkey is activated when any input field is changed. After applying the settings, this softkey is inactivated again.

Cancel: Returns to the [Configuration] screen. Values changed before pressing the **Apply Address** softkey are reverted to the former values.

Screen Field

The following input fields need to be set to use the Tester according to the following description of Table 5-53.

Table 5-53 [Configuration: Network Setting] Screen

Input Field	Description
IP Addr	Sets the IP address of the Tester. Allowable setting value is as follows: 1.0.0.1 to 223.255.255.255 (From 192.168.1.1 to 192.168.1.255 are unavailable to setting.) • The IP address setting supports Class A through Class C. • The Tester does not support Class D (multicast address) and Class E (reserved address). • The default IP address is "192.168.0.1". • If the IP address setting fails, "Invalid" is displayed in the Status field. • Changes to the IP address is effective after pressing the **Apply Address** softkey.
CIDR (Mask)	Sets the subnet mask in CIDR format. Allowable setting values is as follows: 1 to 31 • The default mask value is 24 (255.255.255.0). • If the mask value setting fails, "Invalid" is displayed in the Status field. • Changes to the mask setting is effective after pressing the Apply Address softkey. Refer to "Appendix A Input Fields and Allowable Choices or Ranges" on page A-1 for details.

Table 5-53 [Configuration: Network Setting] Screen

Input Field	Description
Default Gateway	Sets active or inactive of the Default Gateway setting, and sets the Default Gateway address. The allowable settings are as follows: • None: Default Gateway setting is inactivated. • ACT: Default Gateway setting is activated. When "None" is selected, the address setting field is grayed out and inactivated. 1.0.0.1 to 223.255.255.255 (From 192.168.1.1 to 192.168. 1.255 are unavailable to setting.) • The IP address setting supports Class A through Class C. • The Tester does not support Class D (multicast address) and Class E (reserved address). • The Default Gateway setting is valid when you set the allowable Default Gateway address, and the Tester and the Default Gateway belong to the same network. • When the Tester and Default Gateway do not belong to the same network, "Unreachable" is displayed in the Status field because the routing from the Tester cannot be resolved. • If the Default Gateway is set to "None" when booting, the address is displayed as (0.0.0.0), which means invalid. • When the Default Gateway setting fails, "Invalid" is displayed in the Status field. • The Default Gateway setting is effective after pressing the **Apply Address** softkey.
Setting 1 to 5	Sets "Act/None" (active/inactive) of gateway settings from 1 to 5. The allowable setting is as follows: • None: The Gateway setting is inactivated. • ACT: The Gateway setting is activated. • The Gateway setting is effective after pressing the **Apply Address** softkey. When "None" is selected, the address setting field is grayed out and unavailable.
Host/Net	Sets the destination host or network addresses for gateway setting from 1 to 5. Allowable settings are as follows: • When Host address is specified (When the CIDR is set to None.): 1.0.0.1 to 223.255.255.255 (From 192.168.1.1 to 192.168.1.255 are unavailable to setting.) • When Network address is specified (When the CIDR is not set to None): 1.0.0.0 to 223.255.255.255 (From 192.168.1.0 to 192.168.1.255 are unavailable to setting.) • The IP address setting supports Class A through Class C. • The Tester does not support Class D (multicast address) and Class E (reserved address). • When the Gateway setting fails, "Invalid" is displayed in the Status field. • The Host/Net setting is effective after pressing the **Apply Address** softkey. • If the CIDR is set to "None", the Host/Net setting is recognized as a host address. • If the CIDR is set to value other than "None", the Host/Net setting is recognized as the network address. In this case, the address of Host part is set to "0". If it specifies the value other than "0", "Invalid" is displayed in the Status field. • The address setting is automatically changed to 1.0.0.1 when the address was set to 1.0.0.0 and the Host/Net setting is changed from network to host.

Table 5-53 [Configuration: Network Setting] Screen

Input Field	Description
Gateway	Sets the Gateway addresses for gateway setting from 1 to 5. Allowable settings are as follows: 1.0.0.1 to 223.255.255.255 (From 192.168.1.1 to 192.168.1.255 are unavailable to setting.) • The IP address setting supports Class A through Class C. • The Tester does not support Class D (multicast address) and Class E (reserved address). • The gateway setting is valid when you set the allowable address, and the Tester and the Gateway belong to the same network. • If the Gateway is set to None when booting, the address is displayed as (0.0.0.0), which means invalid. • When the Tester and Gateway do not belong to the same network, "Unreachable" is displayed in the Status field. • The Gateway setting is effective after the pressing the **Apply Address** softkey.
CIDR	Sets the subnet masks for the destination address in CIDR format from Setting 1 to 5. Allowable setting values are as follows: None or 1 to 31 • When the CIDR is set to "None", the "Host/Net" setting is recognized as a host address. • When the CIDR is set to value other than "None", the "Host/Net" setting is recognized as network address. • If the "Gateway" setting is disabled when booting, "None" is displayed in the CIDR field. • Changes to the mask setting is effective after pressing the **Apply Address** softkey. Refer to "Appendix A Input Fields and Allowable Choices or Ranges" on page A-1 for details.

† The changing magnification softkey is available. Refer to "Storing Numeric Values" on page 4-10 and "Changing Magnification Softkey" on page 4-13.

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6
Troubleshooting

Item To Be Checked 6-2
Error Information 6-4

This chapter describes how to solve problems and explains about error information that will be displayed on the screen.

Item To Be Checked

The Symptoms listed below may not be caused by Tester failures.

Check on the following items before requesting for repair. Also, refer to the *N9360A Multi UE Tester Installation Guide*.

Table 6-1 Item To Be Checked

Symptom	Section to be checked	Remedy
The Tester is not activated. A message **ERROR!! 0000 1002 Unit initialization failure.** is displayed on the screen.	Is the external reference signal connected correctly?	When the **Reference** on the Configuration screen is set to `External`, the Tester is not activated unless 10 MHz reference signal is inputted to the Reference IN connector on the rear panel. Connect 10 MHz reference signal to the Reference IN connector and then reboot the Tester.
The mobile phone cannot read the TEST USIM.	Is the TEST USIM card set to the mobile phone correctly?	Set the TEST USIM card to the mobile phone correctly. When the card is damaged, and additional purchase is required, contact the Agilent Sales Department or an authorized distributor to place a purchase order for another TEST USIM.
Location update fails.	Is the TEST USIM card set to the mobile phone correctly?	Set the TEST USIM card to the mobile phone correctly. When the card is damaged, and additional purchase is required, contact the Agilent Sales Department or an authorized distributor to place a purchase order for another TEST USIM.
	Is there interference from the external noise?	Shut out external noise by using the shield case, etc.
	Is path loss set correctly?	Set path loss between the Tester and the mobile phone at **Loss** on the [Configuration: Test Condition (Loss)] screen.
	Is the AUTH Key that is set on the Configuration: Test Condition screen same as that of TEST USIM?	Set the value of the AUTH Key to the same value of TEST USIM. (Use remote control to set the Key.)
Call is disconnected at the measurement of Sensitivity BER	Is the BS level too weak?	Raise the BS level.
	Is there interference from the external noise?	Shut out external noise by using the shield case, etc.
	Is path loss set correctly?	Set path loss between the Tester and a mobile phone at **Loss** on the [Configuration: Test Condition (Loss)] screen.

Table 6-1 Item To Be Checked

Symptom	Section to be checked	Remedy
Radio performance tests tend to fail.	Is there interference from the external noise?	Shut out external noise by using the shield case, etc.
	Is path loss set correctly?	Set path loss between the Tester and the mobile phone at **Loss** on the [Configuration: Test Condition (Loss)] screen.
Attach process fails in GPRS mode.	Does the mobile phone require Detach process?	Some kinds of GPRS mobile phones are confirmed that they require Detach from Attached condition. In this case, the Tester cancels Attached condition. Retest from Location Update.

Error Information

Error Screen

Figure 6-1 is an example of the screen that are displayed when an error occurs.

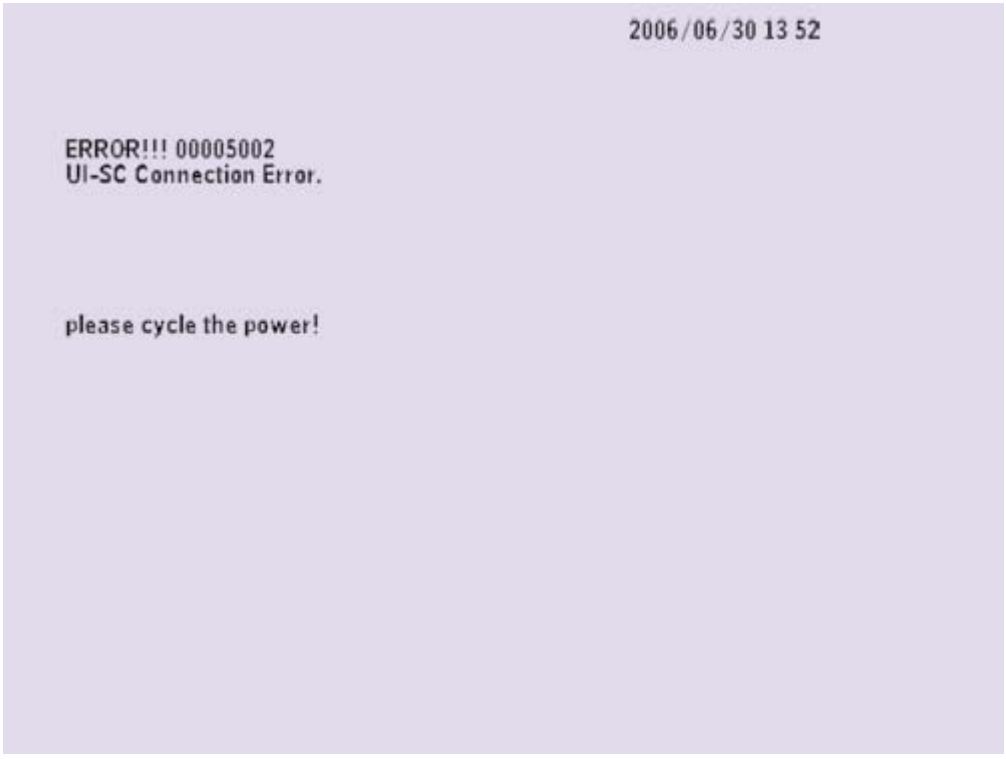

Figure 6-1 An Example of [Error] Screens

Softkey Menu Field

Softkey Menu

Print Screen: Prints a hardcopy of the screen or saves a screen image in a USB memory device depending on the setting of the "Printer" input field on the [Configuration] screen.

Debug Data > USB: Imports debug data into USB memory.

Error Codes for Error Screens

Table 6-2 and Table 6-3 list all the error codes for the error screens. If the following guidelines do not help you to remove the errors, contact the Agilent Sales Department or an authorized distributor.

Table 6-2 Alarm Notification Error Code

Error Code	Error Content	Action
0000	Abnormal internal temperature	Turn off power and disconnect the AC plug.
0001	The Cooling Fan stopped.	
0002	Synthesizer unlock (Tx1)	A failure of the internal reference oscillator may have occurred. Turn off power and disconnect the AC cord. If you use the external reference signal, check if it is connected correctly.
0003	Synthesizer unlock (Tx2)	
0004	Synthesizer unlock (Tx3)	
0005	Synthesizer unlock (Rx1)	
0006	Synthesizer unlock (Rx2)	
0007	ALC alarm (Tx1)	A hardware error occurred. Reboot the Tester.
0008	ALC alarm (Tx2)	
1000	Unit reboot is detected.	A firmware error occurred. Reboot the Tester.
1001	Unit fatal error	
1002	Unit initialization failure	
1003	The combination of UI and SC* is not correct.	
1005	No indispensable file.	
1010	Receiving NAK from RF-CPU	
2000	No MS configuration information	
2002	No scenario	
2003	Scenario read error	
3001	Scenario execution failure because of a hardware error	

* SC: an application module in the Tester

Table 6-3 UI Timer Error Code

Error Code	Error Content	Action
5001	UI-SC Receive Timeout. Last UI->SC* Send [xxxxxxxx]†	A firmware error occurred. Reboot the Tester.
5002	UI-SC Connection Error.	
5003	UI-SC Socket Disconnect.	
5004	UI-SC Socket Send NG.	
5100	UI Timer Error 0: Other	
5101	UI Timer Error 1: Start Timer No. Exist	
5102	UI Timer Error 2: Stop Timer No. not Exist	
5200	UI Inner Error. [x]‡	
6000	Firmware Update Error.	
6100	proc file not found. file=[x]** check sum error. file=[x]** This file is improper. file=[x]**	

* SC: an application module in the Tester

† x of [xxxxxxxx] is a message code.

‡ x of [x] is a UI inner error code.

**x of [x] is a file name.

7
Performance and Specifications

Power Measurement 7-2
Frequency Error 7-3
Origin Offset 7-4
Error Vector Magnitude (EVM) 7-3
ACLR DSB 5MHz (W07 Option) 7-4
ACLR DSB 10MHz (W07 Option) 7-5
OBW (W07 Option) 7-5

This chapter lists the performances and specifications of the N9360A WCDMA Option.

Refer to the N9360A Multi UE Tester Installation Guide about the common specifications of N9360A.

Refer to the N9360A Multi UE Tester GSM Option User Manual and the N9360A Multi UE Tester cdma2000 Option User Manual for the GSM option and the cdma2000 option respectively.

Measurement Performance

Power Measurement

Table 7-1 shows the specification of the power measurement.

Table 7-1 Power Measurement

Item	Specification		Unit	Remarks
Range	-60 to +36		dBm	
Measurement resolution	0.01		dB	
Display resolution	Open Loop	0.1	dB	
	Inner Loop	0.01		
	MAX TX Power	0.01		
	PRACH Power	0.1		
Accuracy (MAX TX Power, TX Power)	0 to +36 dBm			Downlink Output Level: ≤–50dBm
	± 0.7 (25°C ± 5°C) ± 1.0 (0°C to 50°C)		dB	
	–53 to –0.01 dBm			
	± 1.0 (25°C ± 5°C) ± 1.5 (0°C to 50°C)		dB	
	–60 to –53.01 dBm			
	± 1.5 (25°C ± 5°C) ± 2.0 (0°C to 50°C)		dB	
Accuracy (Inner Loop)	–20 to 36 dBm			Downlink Output Level: ≤–50dBm
	1dB Up/Down:±0.2 10dB Up/Down: ±0.5		dB	

Frequency Error

Table 7-2 shows the specification of the frequency error measurement.

Table 7-2 Frequency Error

Item	Specification	Unit	Remarks
Measurement Range	0 to ±500	Hz	
Measurement Resolution	0.1	Hz	
Display Resolution	0.1	Hz	
Accuracy	± (10 + Reference signal accuracy)	Hz	Downlink Output Level: ≤–50 dBm Average of two measurements.
Input Level Range	–20 to +36	dBm	

Error Vector Magnitude (EVM)

Table 7-3 shows the specification of the EVM measurement.

Table 7-3 Error Vector Magnitude (EVM)

Item	Specification	Unit	Remarks
Measurement Range	0 to 20	%	
Measurement Resolution	0.01	%	
Display Resolution	0.01	%	
Residual EVM	≤ 3.8	%	Downlink Output Level: ≤–50dBm
Input Range	–20 to +36	dBm	

Origin Offset

Table 7-4 shows the specification of the origin offset measurement.

Table 7-4 Origin Offset

Item	Specification	Unit	Remarks
Range	–10 to –50	dB	
Measurement Resolution	0.01	dB	
Display Resolution	0.01	dB	
Inherent offset	≤ –50	dB	Downlink Output Level: ≤–50dBm
Input Level Range	–20 to +36	dBm	

Sensitivity/BER

Table 7-5 Sensitivity/BER

Item		Specification	Unit	Remarks
Input Level Range		–20 to +36	dBm	
Sync Range	PN9fix	0.00 to 99.99	%	
	PN9	0.00 to 25.00		
	PN15	0.00 to 33.00		

ACLR DSB 5MHz (W07 Option)

Table 7-6 shows the specification of the ACLR DSB 5MHz measurement.

Table 7-6 ACLR DSB 5MHz

Item	Specification	Unit	Remarks
Measurement Range	0 to –40	dB	
Floor	≤ –40	dB	Downlink Output Level: ≤–50dBm
Input Level	–5 to +36	dBm	

ACLR DSB 10MHz (W07 Option)

Table 7-7 shows the specification of the ACLR DSB 10MHz measurement

Table 7-7 ACLR DSB 10MHz

Item	Specification	Unit	Remarks
Measurement Range	0 to –48	dB	
Floor	≤ –48	dB	Downlink Output Level: ≤–50dBm
Input Level	–5 to +36	dBm	

OBW (W07 Option)

Table 7-8 shows the specification of the OBW measurement

Table 7-8 OBW

Item	Specification	Unit	Remarks
Measurement Range	0 to 9.99	MHz	
Accuracy	≤ ±0.1	MHz	Downlink Output Level: ≤–50dBm
Input Level	–5 to +36	dBm	

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A
Appendix A Input Fields and Allowable Choices or Ranges

Table A-1, “Input Fields and Allowable Choices or Ranges,” on page A-2

This chapter lists a table of the input fields and allowable choices or ranges of values for test parameters and test items. This table is also useful for configuring the [Configuration: Test Sequence] and [Configuration: Test Condition] screens.

Refer to the N9360A Multi UE Tester GSM Option User Manual and the N9360A Multi UE Tester cdma2000 Option User Manual when you specify GSM or cdma2000 in the Test Sequence.

Table A-1 Input Fields and Allowable Choices or Ranges

Screen	Parameter		Parameter
Automatic Test	RFCH	Band 1	9600 to 9900
		Band 2	9250 to 9550 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287
		Band 3	8550 to 8925
		Band 4	8550 to 8775 1162, 1187, 1212, 1237, 1262, 1287, 1312, 1337, 1362
		Band 5	4120 to 4245 782, 787, 807, 812, 837, 862
		Band 6	812, 837 and 4150 to 4200
		—	—
Manual Test	Measurement Item Selection		On | Off
	RFCH	Band 1	9600 (1920.0 MHz) to 990(1980.0 MHz)
		Band 2	9250 (1850.0 MHz) to 9550 (1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz)
		Band 3	8550 (1710.0 MHz) to 8925 (1785.0 MHz)
		Band 4	8550 (1710.0 MHz to 8775 (1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz)
		Band 5	4120 (824.0 MHz) to 4245 (849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837 (837.5 MHz), 862 (842.5 MHz)
		Band 6	4150 (830.0 MHz) to 4200 (840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz)
	BS Level		–115.0 to –18.0
	BS Call		AMR | RMC

Table A-1 Input Fields and Allowable Choices or Ranges

Screen	Parameter		Parameter
	PWR CNTL	Control Value	1 to 99
		Control	UP | DOWN | HOLD | CNT UP | CNT DWN
	Caller ID		ON | OFF
	BER Frames		1 to 4100
	Averaging		Off | 2 to 99
	CPICH RSCP		Off | On
	Ec/Ior (Option W06)		Refer to Table 5-29
	FRC Type (Option W06)	FRC	H-Set1 to H-Set5 | CQI-1 to CQI-30
		Modulation	QPSK | 16QAM
	Meas. Type (Option W06)	Type	TTI | CQI
		Value	1 to 100000
	UE Category (Option W06)		1 to 6 | 11 | 12
TX Analyzer	Measurement Item Selection		Off | On

Table A-1 Input Fields and Allowable Choices or Ranges

Screen	Parameter		Parameter
	RFCH	Band 1	9600 (1920.0 MHz) to 990 (1980.0 MHz)
		Band 2	9250 (1850.0 MHz) to 9550 (1910.0 MHz) 12 (1852.5 MHz), 37 (1857.5 MHz), 62 (1862.5 MHz), 87 (1867.5 MHz), 112 (1872.5 MHz), 137 (1877.5 MHz), 162 (1882.5 MHz), 187 (1887.5 MHz), 212 (1892.5 MHz), 237 (1897.5 MHz), 262 (1902.5 MHz), 287 (1907.5 MHz)
		Band 3	8550 (1710.0 MHz) to 8925 (1785.0 MHz)
		Band 4	8550 (1710.0 MHz to 8775 (1755.0 MHz) 1162 (1712.5 MHz), 1187 (1717.5 MHz), 1212 (1722.5 MHz), 1237 (1727.5 MHz), 1262 (1732.5 MHz), 1287 (1737.5 MHz), 1312 (1742.5 MHz), 1337 (1747.5 MHz), 1362 (1752.5 MHz)
		Band 5	4120 (824.0 MHz) to 4245 (849.0 MHz) 782 (826.5 MHz), 787 (827.5 MHz), 807 (831.5 MHz), 812 (832.5 MHz), 837 (837.5 MHz), 862 (842.5 MHz)
		Band 6	4150 (830.0 MHz) to 4200 (840.0 MHz) 812 (832.5 MHz), 837 (837.5 MHz)
	Amplitude		–115.0 to –18.0
	Modulation		IDLE | IDLE+DPCH(PN9) | IDLE+DPCH(PN15) | IDLE+DPCH(PN9)+OCNS | IDLE+DPCH(PN15)+OCNS
	Averaging		Off | 2 to 99
	RF Output		On| Off

Table A-1 Input Fields and Allowable Choices or Ranges

Screen	Parameter		Parameter
Signal Generator	RFCH	Band 1	10550 (2110.0 MHz) to 10850 (2170.0 MHz)
		Band 2	9650 (1930.0 MHz) to 9950 (1990.0 MHz) 412 (1932.5 MHz), 437 (1937.5 MHz), 462 (1942.5 MHz), 487 (1947.5 MHz), 512 (1952.5 MHz), 537 (1957.5 MHz), 562 (1962.5 MHz), 587 (1967.5 MHz), 612 (1972.5 MHz), 637 (1977.5 MHz), 662 (1982.5 MHz), 687 (1987.5 MHz)
		Band 3	9025 (1805.0 MHz) to 9400 (1880.0 MHz)
		Band 4	10550 (2110.0 MHz) to 10775 (2155.0 MHz) 1462 (2112.5 MHz), 1487 (2117.5 MHz), 1512 (2122.5 MHz), 1537 (2127.5 MHz), 1562 (2132.5 MHz), 1587 (2137.5 MHz), 1612 (2142.5 MHz), 1637 (2147.5 MHz), 1662 (2152.5 MHz)
		Band 5	4345 (869.0 MHz) to 4470 (894.0 MHz) 1007 (871.5 MHz), 1012 (872.5 MHz), 1032 (876.5 MHz), 1037 (877.5 MHz), 1062 (882.5 MHz), 1087 (887.5 MHz)
		Band 6	1037:877.5 MHz, 1062:882.5 MHz and 4375:875.0 MHz to 4425:885.0 MHz
	Amplitude		–115.0 to –18.0
	Modulation	Standard	Off | IDLE | IDLE+DPCH(PN9) | IDLE+DPCH(PN15)
		(Option W06)	IDLE+DPCH+H-Set1 to H-Set5 |IDLE+DPCH+CQI-1 to CQI-30
			QPSK | 16QAM
	UE Category (Option W06)		1 to 6 | 11 | 12
	Ec/Ior (Option W06)		Refer to Table 5-29.
	OCNS		On
	RF Output		Off | On

Table A-1 Input Fields and Allowable Choices or Ranges

Screen	Parameter		Parameter
Configuration (Top Menu)	Reference		Internal | External
	Serial Port	Baud Rate	9600 | 19200 | 38400 | 57600 | 115200
		Data Length	7 | 8
		Stop Bits	1 | 1.5 | 2
		Parity	None | Even | Odd
		Xcontrol	None | Xon/Xoff
	GP-IB	Address	1 to 15
		EOI	Off | On
	Terminator		CR | LF | CR+LF
	Date/Time	YYYY	1990 to 2037
		MM	01 to 12
		DD	01 to 31
		HH	00 to 23
		MM	00 to 59
	Loss		Off | On
	RF In (Band 1, 6)		0.0 to 99.9
	RF Out (Band 1, 6)		0.0 to 99.9
	Printer		EPSON PM-G800 | USB Memory
	Beeper		Off | On
Network Setting	IP Addr		1.0.0.1 ~ 223.255.255.255
	CIDR (Mask)		1 ~ 31
	Default Gateway		ACT| None
	Addr		1.0.0.1 ~ 223.255.255.255
	Gateway Setting 1 ~ 5	Setting	ACT| None
		Host/Net	Host: 1.0.0.1 ~ 223.255.255.255 Net: 1.0.0.0 ~ 223.255.255.255
		CIDR (MASK)	None| 1 ~ 31
		Gateway	1.0.0.1 ~ 223.255.255.255

Table A-1 Input Fields and Allowable Choices or Ranges

Screen	Parameter		Parameter
Configuration Test Condition	W-CDMA Mode		W-CDMA | HSDPA
	Band		1 | 2 | 3 | 4 | 5 | 6
	BS Level		–115.0 to –18.0
	BER Frames		1 to 4100
	Averaging		Off | 2 to 99
	Meas. Type (Option W06)	Type	TTI | CQI
		Value	1 to 100000
	H-ARQ retrans (Option W06)		1 | 4
	Loopback Delay		Short | Mid | Long
	Connection Wait		0 to 120
	TPC Algorithm		1 | 2
	LU Softkey		On | Off
	RMC HO Alert		On | Off
	3GPP System		1 to 3
	Signalling Pattern		1 to 255
	AUTH Key		DRG | STD | USER

Table A-1 Input Fields and Allowable Choices or Ranges

Screen	Parameter		Parameter
	Test Item (LO Limit, HI Limit)	Open Loop TX Power	–99.9 to +99.9
		ILP (Down Min)	–99.99 to +99.99
		ILP (Down Max)	–99.99 to +99.99
		ILP (Up Min)	–99.99 to +99.99
		ILP (Up Max)	–99.99 to +99.99
		ILP (10slots Down)	–99.99 to +99.99
		ILP (10slots Up)	–99.99 to +99.99
		MAX TX Power	–99.99 to +99.99
		Frequency Error	–999.9 to +999.9
		EVM	0.00 to 99.99
		Origin Offset	–99.99 to 0.00
		Sensitivity/ BER	0.00 to 99.99
		MIN TX Power	–99.99 to +99.99
		ACLR DSB 5MHz (W07 option)	–99.99 to 0.00
		ACLR DSB 10MHz (W07 option)	–99.99 to 0.00
		OBW (W07 option)	0.00 to 9.99
		Throughput R (Option W06)	0 to 99999
		Median CQI (Option W06)	0 to 30

Table A-1 Input Fields and Allowable Choices or Ranges

Screen	Parameter		Parameter
Configuration Test Sequence	Sequence No. 1		W-CDMA | GSM850 | GSM900 | DCS1800 | PCS1900
	Sequence No. 2		W-CDMA | GSM850 | GSM900 | DCS1800 | PCS1900 | ——
	Sequence No.		1 | 2
	Location Update		— | LU1 | LU2
	MS Call		— | Run
	Talk		— | Run
	BS Call (AMR)		— | Run
	Talk		— | Run
	AMR Terminate		BS Release | Handover
	BS Call (RMC)		— | Run
	RF Test		— | Run
	RMC Terminate		BS Release | Handover
	BS Level Setting	Band	1 | 2 | 3 | 4 | 5 | 6
		BS Level	–110.0 to –20.0
		Measurement BS Level	–115.0 to –18.0
		Openloop BS Level	–115.0 to –18.0
		FreqError BS Level	–115.0 to –18.0
		BER BS Level	–115.0 to –18.0
	RF Output		On | Auto
	BER Frames		1 to 4100
	Wait Before Paging		0.0 to 99.9

Table A-1 Input Fields and Allowable Choices or Ranges

Screen	Parameter		Parameter
	RFCH	Band 1	9600 to 9900
		Band 2	9250 to 9550 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287
		Band 3	8550 to 8925
		Band 4	8550 to 8775 1162, 1187, 1212, 1237, 1262, 1287, 1312, 1337, 1362
		Band 5	4120 to 4245 782, 787, 807, 812, 837, 862
		Band 6	4150 to 4200 812, 837
	Open Loop TX Power		— | Run
	ILP (Inner Loop Power)		— | Run
	MAX TX Power		— | Run
	Frequency Error		— | Run
	EVM		— | Run
	Sensitivity/BER		— | Run
	MIN TX Power		— | Run
	ATT In		–9.9 to +9.9
	ATT Out		–9.9 to +9.9
Configuration File Management	Filename		Arbitrary character string
	Comments		Arbitrary character string

B
Appendix B General Information on the W-CDMA (FDD) System

Frequency Bands B-2
TX-RX Frequency Separation B-2
Channel Number B-3
UARFCN B-3
UE Maximum Output Power B-4
List of Abbreviations B-5

This chapter describes the references, parameters and major information such as frequency bands used on the W-CDMA (FDD) system.

Frequency Bands

FDD is designed to operate in the following paired bands.

Table B-1 Frequency Bands

Band	UL Frequencies	DL Frequencies
I	1920 to 1980 MHz	2110 to 2170 MHz
II	1850 to 1910 MHz	1930 to 1990 MHz
III	1710 to 1785 MHz	1805 to 1880 MHz
IV	1710 to 1770 MHz	2110 to 2170 MHz
V	824 to 849 MHz	869 to 894 MHz
VI	830 to 840 MHz	875 to 885 MHz

TX-RX Frequency Separation

FDD is designed to operate with the following TX-RX frequency separation.

Table B-2 TX-RX Frequency Separation

Operating Band	TX-RX Frequency Separation
I	190 MHz
II	80 MHz
III	95 MHz
VI	45 MHz

Channel Number

The carrier frequency is designed by the UTRA Absolute Radio Frequency Channel Number (UARFCN). The UARFCN values are defined in Table B-3.

Table B-3 UARFCN Definition

	UARFCN	Carrier Frequency [MHz]
Uplink	Nu = 5 Fuplink	0.0 MHz ≤ Fuplink ≤ 3276.6 MHz where Fuplink is the uplink frequency in MHz.
Downlink	Nd = 5 Fdownlink	0.0 MHz ≤ Fdownlink ≤ 3276.6 MHz where Fdownlink is the downlink frequency in MHz.

Table B-4 UARFCN Definition (Band II Additional Channels)

	UARFCN	Carrier Frequency [MHz]
Uplink	Nu = 5 (Fuplink – 1850.1 MHz)	Fuplink = 1852.5, 1857.5, 1862.5, 1867.5, 1872.5, 1877.5, 1882.5, 1887.5, 1892.5, 1897.5, 1902.5, 1907.5
Downlink	Nd = 5 (Fdownlink – 1850.1 MHz)	Fdownlink = 1932.5, 1937.5, 1942.5, 1947.5, 1952.5, 1957.5, 1962.5, 1967.5, 1972.5, 1977.5, 1982.5, 1987.5

UARFCN

The following UARFCN range is supported for each paired band.

Table B-5 UARFCN

Band	Uplink; UE Transmit	Downlink; UE Receive
I	9612 to 9888	10562 to 10838
II	9262 to 9538 and 12, 37, 62, 87, 112, 137, 162, 187, 212, 237, 262, 287	9662 to 9938 and 412, 437, 462, 487,512, 537, 562, 587, 612, 637, 662, 687
III	8562 to 8913	9037 to 9388
V	4132 to 4233 and 782,787,807,812,837,862	4357 to 4458 and 1007, 1012, 1032, 1037, 1062, 1087
VI	4162 to 4188 and 812, 837	4387 to 4413 and 1037, 1062

UE Maximum Output Power

The following Power Classes define the nominal maximum output power. The nominal power defined is the broadband transmit power of the UE, that is; the power is a bandwidth of at least (1+a) times the chip rate of the radio access mode. The period of the measurement is at least one timeslot.

Table B-6 UE Maximum Output Power

Operating Band	Power Class 1		Power Class 2		Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
Band I	+33	+1/–3	+27	+1/–3	+24	+1/–3	+21	+2/–2
Band II	—	—	—	—	+24	+1/–3	+21	+2/–2
Band III	—	—	—	—	+24	+1/–3	+21	+2/–2

Reference: 3rd Generation Partnership Project (3GPP). Technical Specification Group Terminals. Terminal conformance specification. Radio transmission and reception (FDD) Release 5. 3GPP TS 34.121.

List of Abbreviations

0 to 9	
2G	2nd Generation
3G	3rd Generation
3GPP	Third Generation Partnership Project
16QAM	16 Quadrature (Quaternary) Amplitude Modulation
A	
ACLR	Adjacent Channel Leakage Power Ratio
AFC	Automatic Frequency Control
AI	Acquisition Indicator
AICH	Acquisition Indicator Channel
ARFCN	Absolute Radio Frequency Channel Number
AMR	Adaptive Multi-Rate
ARIB	Association of Radio Industries and Businesses
ASN.1	Abstract Syntax Notation One
AWGN	Additive White Gaussian Noise
B	
BCH	Broadcast Channel
BCCH	Broadcast Control Channel
BER	Bit Error Ratio
BLER	Block Error Ratio
BPSK	Binary Phase Shift Keying
BS	Base Station
BTS	Base Transceiver Station
C	
CCCH	Common Control Channel
CDMA	Code Division Multiple Access
CFN	Connection Frame Number
CPICH	Common Pilot Channel
CRC	Cyclic Redundancy Check
CS	Circuit Switched
	Coding Scheme
CW	Continuous Wave (Unmodulated Signal)
CQI	Channel Quality Indicator
D	
DCCH	Dedicated Control Channel
DL	Downlink (Forward Link)
DPCCH	Dedicated Physical Control Channel
DPCH	Dedicated Physical Channel
DPDCH	Dedicated Physical Data Channel
DS-CDMA	Direct-Sequence Code Division Multiple Access
DTCH	Dedicated Traffic Channel
DTX	Discontinuous Transmission
E	
Ec/No	Ratio of energy per modulating bit to the noise spectral density
EDGE	Enhanced Data Rates for GSM Evolution
EGPRS	Enhanced GPRS
ETSI	European Telecommunications Standards Institute
EVM	Error Vector Magnitude

F

FACH	Forward Access Channel
FDD	Frequency Division Duplex
FRC	Fixed Reference Channel

G

GMSK	Gaussian Minimum Shift Keying
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications

H

HO	Handover
HARQ	Hybrid Automatic Repeat Request
HSDPA	High Speed Downlink Packet Access
HS-DPCCH	High Speed Dedicated Physical Control Channel
HS-DSCH	High Speed Downlink Shared Channel
HS-PDSCH	High Speed Physical Downlink Shared Channel
HS-SCCH	High Speed Shared Control Channel

I

IMEI	International Mobile Equipment Identity
IMSI	International Mobile Subscriber Identity
IMT-2000	International Mobile Telecommunications 2000

N

NAS	Non-Access Stratum
NBAP	Node B Application Part
NW	Network

O

OBW	Occupied Bandwidth
OCNS	Orthogonal Channel Noise Simulator
OVSF	Orthogonal Variable Spreading Factor

P

P-CCPCH	Primary Common Control Physical Channel
P-CPICH	Primary Common Pilot Channel
PCCH	Paging Control Channel PCH Paging Channel
PCPCH	Physical Common Packet Channel
PDCH	Packet Data Channel
PDSCH	Physical Downlink Shared Channel
PDTCH	Packet Data Traffic Channel
PHY	Physical layer
PhyCH	Physical Channel
PI	Page Indicator
PICH	Page Indicator Channel
PIN	Personal Identification Number
PN	Pseudo Noise
PRACH	Physical Random Access Channel
PSCH	Physical Shared Channel

Q

QPSK	Quadrature (Quaternary) Phase Shift Keying

R

R99	Release 1999
RAB	Radio Access Bearer
RACH	Random Access Channel
Rel-4	Release 4
Rel-5	Release 5
RF	Radio Frequency
RFCH	Radio Frequency Channel
RRC	Radio Resource Control
RSCP	Received Signal Code Power
RSSI	Received Signal Strength Indicator

S

S-CCPCH	Secondary Common Control Physical Channel
S-CPICH	Secondary Common Pilot Channel
SCH	Synchronization Channel
SF	Spreading Factor
SFN	Spreading Factor Number
SIM	GSM Subscriber Identity Module
SIR	Signal-to-Interference Ratio
SMS	Short Message Service
SRB	Signalling Radio Bearer
SSDT	Site Selection Diversity Transmission

T

TCH	Traffic Channel
TD-CDMA	Time Division-Code Division Multiple Access
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
TFCI	Transport Format Combination Indicator
TFI	Transport Format Indicator
	Temporary Flow Identity
TFS	Transport Format Set
TI	Transaction Identifier
TMSI	Temporary Mobile Subscriber Identity
TPC	Transmit Power Control
TRX	Transceiver
TSG	Technical Specification Group
TTI	Transmission Timing Interval

U

UARFCN	UTRA Absolute Radio Frequency Channel Number
UARFN	UTRA Absolute Radio Frequency Number
UART	Universal Asynchronous Receiver and Transmitter
UDI	Unrestricted Digital Information
UI	User Interface Unnumbered Information (Frame)
UMTS	Universal Mobile Telecommunications System
USB	Universal Serial Bus
USIM	Universal Subscriber Identity Module
UTRA	UMTS Terrestrial Radio Access

W

W-CDMA

C
Appendix C N9360A-A02 Antenna Coupler

Introduction C-2
Specifications C-2
Operating the Antenna Coupler C-3

This chapter describes information of the Agilent N9360A-A02 Antenna Coupler.

Introduction

The Agilent Technologies N9360A-A02 Antenna Coupler enables you to make the RF connection easily between the mobile phone and the Agilent N9360A Multi UE Tester.

The purpose of this guide is to provide you with the information on the Agilent N9360A-A02 Antenna Coupler. This section contains the following:

- The specifications of the Agilent N9360A-A02 Antenna Coupler.
- Tester for operating the Agilent N9360A-A02 Antenna Coupler with the Agilent N9360A Multi UE Tester.

Specifications

This section lists the specifications of the Agilent N9360A-A02 Antenna Coupler. These specifications are the performance standards and limits against which the N9360A-A02 is tested. When shipped from the factory, the N9360A-A02 meets the following specifications:

- Operation Frequency Range:

  824 MHz to 960 MHz, 1710 to 1880 MHz, and 1880 to 1990 MHz
- Coupling Factor:

  15 dB (at 824 MHz to 960 MHz; supplemental characteristics)

  13 dB (at 1710 MHz to 1880 MHz; supplemental characteristics)

  11 dB (at 1880 MHz to 1990 MHz; supplemental characteristics)
- Connector Type:

  N-type (male)
- Operating Temperature:

  0 to 40 ºC
- Storage Temperature:

  –20 to 60 ºC
- Dimension:

Outside Diameter: approximately 34 mm

Inside Diameter: approximately 10 mm

Length: approximately 42 mm

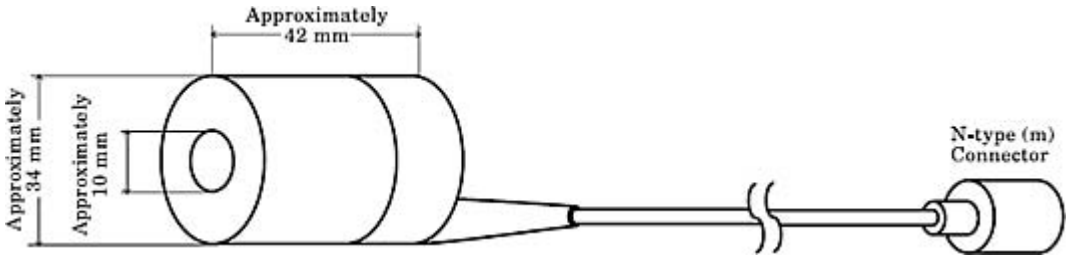

Figure C-1 Agilent N9360A-A02 Antenna Coupler

Operating the Antenna Coupler

1. If the antenna of the mobile phone can be stretched, fully stretch the antenna.
2. Connect the Antenna Coupler to the RF IN/OUT connector of the Agilent N9360A Multi UE Tester.
3. Insert the antenna into the hole of the Antenna Coupler pushing the Antenna Coupler down to the root of the antenna.

Figure C-2 Operating the Antenna Coupler

NOTE Make sure that the coupler is always placed exactly at the same position for each test with the same type antenna. Only in this way can consistent test conditions and test results be assured.

4 Set the attenuation (loss) values on the Configuration screen. Refer to Entering Loss on the [Configuration] Screen on page 21.

D
Appendix D Parameters of Physical Channels

Modulation is set to Idle D-2
Modulation is set to Idle + DPCH D-2
UL reference measurement channel (12.2 kbps) D-4
DL reference measurement channel (12.2 kbps) D-6
OCNS (non-HSDPA) D-10

This chapter lists the parameters of the physical channels transmitted and received in the Signal Generator mode and the TX Analyzer mode.

Physical Channel Parameters of Signal Generator

The following shows the parameters of the physical channels for each parameter of **Modulation** on the TX Analyzer and the Signal Generator screen.

Modulation is set to Idle

Table D-1 shows the channel parameter of when the **Modulation** on the TX Analyzer and the Signal Generator screen is set to `IDLE`.

Table D-1 Channel Parameter (IDLE)

Physical Channel	Power
Ior: RF Output Level	Amplitude
CPICH	CPICH_Ec / Ior = –3.3 dB
P-CCPCH + SCH	(P-CCPCH_Ec + SCH_Ec) / Ior = –5.3 dB
PICH	PICH_Ec / Ior = –8.3 dB
S-CCPCH	S-CCPCH_Ec / Ior = –10.3 dB

Modulation is set to Idle + DPCH

Table D-2 shows the channel parameter of when the **Modulation** on the TX Analyzer and the Signal Generator screen is set to `IDLE + DPCH (PN9)` or `IDLE + DPCH (PN15)`.

Table D-2 Channel Parameter (IDLE + DPCH)

Physical Channel	Power
Ior: RF Output Level	Amplitude
CPICH	CPICH_Ec / Ior = –3.3 dB
P-CCPCH + SCH	(P-CCPCH_Ec + SCH_Ec) / Ior = –5.3 dB
PICH	PICH_Ec / Ior = –8.3 dB
DPCH*	DPCH_Ec / Ior = –10.3 dB

* 12.2 kbps DL reference measurement channel on 3GPP TS34.121

Modulation is set to Idle + DPCH + H-Set1 to H-Set5, CQI-1 to CQI-30

Table D-16 shows the channel parameter of when the "Modulation" on the Signal generator screen is set to "IDLE + DPCH + H-Set1 to H-Set5" or "IDLE + DPCH +CQI-1 to CQI-30".

Spreading code (non-HSDPA)

Spreading codes are set on the Tester as Table D-3.

Table D-3 Spreading Code (non-HSDPA)

Direction	Code	Channels	Signal Generator/TX Analyzer
Uplink	Scrambling Code No.	DPCH*	0
Downlink	Primary Scrambling Code	—	100
	Channelization Code	P-CPICH	0
		P-CCPCH	1
		S-CCPCH	2
		PICH	2
		DPCH†	96

* 12.2 kbps DL reference measurement channel on 3GPP TS34.121

† 12.2 kbps UL reference measurement channel on 3GPP TS34.121

Spreading code (HSDPA)

Spreading codes are set on the Tester as shown in Table D-4.

Table D-4 Spreading Code (HSDPA)

Direction	Code	Channels	Signal Generator/TX Analyzer
Uplink	Scrambling Code No.	DPCH*	0
Downlink	Primary Scrambling Code	—	100
	Channelization Code	P-CPICH	0
		P-CCPCH	1
		S-CCPCH	2
		PICH	2
		DPCH†	96
		HS-SCCH	2
		HS-PDSCH	1 to 6

* 12.2 kbps DL reference measurement channel on 3GPP TS34.121

† 12.2 kbps UL reference measurement channel on 3GPP TS34.121

UL reference measurement channel (12.2 kbps)

Table D-5 UL RMC Physical Parameters (12.2 kbps)

Parameter	Level	Unit
Information bit rate	12.2	kbps
DPDCH	60	kbps
DPCCH	15	kbps
DPCCH Slot Format #i	0	—
DPCCH/DPDCH power ratio	–5.46	dB
TFCI	On	—
Repetition	23	%

Table D-6 UL RMC Transport Channel Parameters (12.2 kbps)

RAB/Signaling RB	RAB	SRB
Logical channel type	DTCH	DCCH
TB sizes (bit)	244	100
TTI (ms)	20	40
Coding type	Convolution Coding	Convolution Coding
Coding rate	1/3	1/3
CRC (bit)	16	12
Max number of bits/TTI after channel coding	804	360
Uplink: Max number of bits/ radio frame before rate matching	402	90
RM attribute	256	256

DL reference measurement channel (12.2 kbps)

Table D-7 DL RMC Physical Channel (12.2 kbps)

Parameter	Level	Unit
Information bit rate	12.2	kbps
DPCH	30	kbps
Slot Format #I	11	—
TFCI	On	
Power offsets PO1, PO2 and PO3	0	dB
DTX position	Fixed	—

Table D-8 DL RMC Transport Channel Parameters (12.2 kbps)

RAB/Signaling RB	RAB	SRB
Logical channel type	DTCH	DCCH
TB sizes (bit)	244	100
TTI (ms)	20	40
Coding type	Convolution Coding	Convolution Coding
Coding rate	1/3	1/3
CRC (bit)	16	12
Max number of bits/TTI after channel coding	804	360
RM attribute	256	256

DL reference channel (HSDPA)

Fixed Reference Channel H-Set1

Table D-9 Fixed Reference Channel H-Set1

Parameter		Value	Unit
Inter-TTI	3	3	TTI's
HARQ process	2	2	
Information bit payload	3202	4664	Bits
Soft channel bits for each HARQ process	9600	9600	Bits
Coding rate	0.67	0.61	
Number of physical channel code	5	4	–
Modulation type	QPSK	16QAM	

Fixed Reference Channel H-Set2

Table D-10 Fixed Reference Channel H-Set2

Parameter		Value	Unit
Inter-TTI	2	2	TTI's
HARQ process	3	3	
Information bit payload	3202	4664	Bits
Soft channel bits for each HARQ process	9600	9600	Bits
Coding rate	0.67	0.61	
Number of physical channel code	5	4	–
Modulation type	QPSK	16QAM	

Fixed Reference Channel H-Set3

Table D-11 Fixed Reference Channel H-Set3

Parameter	Value		Unit
Inter-TTI	1	1	TTI's
HARQ process	6	6	
Information bit payload	3202	4664	Bits
Soft channel bits for each HARQ process	9600	9600	Bits
Coding rate	0.67	0.61	
Number of physical channel code	5	4	–
Modulation type	QPSK	16QAM	

Fixed Reference Channel H-Set4

Table D-12 Fixed Reference Channel H-Set4

Parameter	Value	Unit
Inter-TTI	2	TTI's
HARQ process	2	
Information bit payload	3202	Bits
Soft channel bits for each HARQ process	7200	Bits
Coding rate	0.67	
Number of physical channel code	5	–
Modulation type	QPSK	

Fixed Reference Channel H-Set5

Table D-13 Fixed Reference Channel H-Set5

Parameter	Value	Unit
Inter-TTI	1	TTI's
HARQ process	3	
Information bit payload	3202	Bits
Soft channel bits for each HARQ process	9600	Bits
Coding rate	0.67	
Number of physical channel code	5	–
Modulation type	QPSK	

OCNS (non-HSDPA)

Table D-14 Electric Ratio of Downlink Physical Channel

Physical CH	Ec/Ior (the ratio of code power to all power)		
	Unestablished Radio Link	Established Radio Link (OCNS=OFF)	Established Radio Link (OCNS=ON)
CPICH	–3.32 dB	–3.32 dB	–10 dB
P-CCPCH	–5.32 dB	–5.32 dB	–12 dB
P-SCH	–8.32 dB	–8.32 dB	–15 dB
S-SCH	–8.32 dB	–8.32 dB	–15 dB
S-CCPCH	–10.32 dB	(OFF)	(OFF)
PICH	–8.32 dB	–8.32 dB	–15 dB
DPCH*	(OFF)	–10.32 dB	–19 dB
OCNS	(OFF)	(OFF)	–1.01 dB

* DPCH data is 10 ms periodic reputation pattern.

Table D-15 DPCH Channelization Code and Relative Level Setting for OCNS Signal

Channelization Code at SF=128*	Relative Level setting (dB)* †
2	–1
11	–3
17	–3
23	–5
31	–2
38	–4
47	–8
55	–7
62	–4
69	–6
78	–5
85	–9
94	–10
125	–8
113	–6
119	0

* The DPCH Channelization Codes and relative level settings are chosen to simulate a signal with realistic Peak to Average Ratio.

† The relative level setting specified in dB refers only to the relationship between the OCNS channels. The level of the OCNS channels relative to the Ior of the complete signal is a function of the power of the other channels in the signal with the intention that the power of the group of OCNS channels is used to make the total signal add up to 1.

OCNS (HSDPA)

Table D-16 Code Power Ratio of Downlink Physical Channel

Combination of FRC Type and Modulation Type (UE Category)		Ec/Ior (the ratio of code power to all power) (dB)								
FRC Type	**Modulation Type (UE Category)**	**P-CPICH**	**P-CCPCH**	**SCH**	**PICH**	**DPCH**	**HS-SCCH**	**HS-PDSCH All**	**HS-PDSCH Each**	**OCNS**
H-Set1 H-Set2 H-Set3 H-Set4 H-Set5	QPSK (–)	–9.90	–11.90	–11.90	–14.90	–5.00	–7.40	–5.90	–12.89	–13.30
		–9.90	–11.90	–11.90	–14.90	–5.00	–8.40	–5.90	–12.89	–10.75
		–9.90	–11.90	–11.90	–14.90	–8.40	–8.40	–2.90	–9.89	–50.1
H-Set1	16QAM (–)	–10.00	–12.00	–12.00	–15.00	–13.00	–13.00	–3.00	–9.02	–6.91
H-Set1 H-Set2 H-Set3	16QAM (–)	–9.90	–11.90	–11.90	–14.90	–5.00	–7.40	–5.90	–11.92	–13.30
		–9.90	–11.90	–11.90	–14.90	–5.00	–8.40	–5.90	–11.92	–10.75
		–9.90	–11.90	–11.90	–14.90	–8.40	–8.40	–2.90	–8.92	–50.1
CQI-1 to CQI-6	QPSK (1 to 6,11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–3.00	–3.00	–9.83
CQI-7 to CQI-9	QPSK (1 to 6,11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–3.00	–6.01	–9.83
CQI-10 to CQI-12	QPSK (1 to 6,11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–3.00	–7.77	–9.83
CQI-13 to CQI-14	QPSK (1 to 6,11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–3.00	–9.02	–9.83
CQI-15	QPSK (1 to 6,11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–3.00	–9.99	–9.83
CQI-16 to CQI-22	16QAM (1 to 6)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–3.00	–9.99	–9.83
CQI-23	16QAM (1 to 6)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–4.00	–10.99	–6.84
CQI-24	16QAM (1 to 6)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–5.00	–11.99	–5.39
CQI-25	16QAM (1 to 6)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–6.00	–12.99	–4.51

Table D-16 Code Power Ratio of Downlink Physical Channel

Combination of FRC Type and Modulation Type (UE Category)		Ec/Ior (the ratio of code power to all power) (dB)								
FRC Type	Modulation Type (UE Category)	P-CPICH	P-CCPCH	SCH	PICH	DPCH	HS-SCCH	HS-PDSCH All	HS-PDSCH Each	OCNS
CQI-26	16QAM (1 to 6)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–7.00	–13.99	–3.92
CQI-27	16QAM (1 to 6)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–8.00	–14.99	–3.50
CQI-28	16QAM (1 to 6)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–9.00	–15.99	–3.19
CQI-29	16QAM (1 to 6)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–10.00	–16.99	–2.97
CQI-30	16QAM (1 to 6)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–11.00	–17.99	–2.79
CQI-16	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–4.00	–10.99	–6.84
CQI-17	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–5.00	–11.99	–5.39
CQI-18	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–6.00	–12.99	–4.51
CQI-19	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–7.00	–13.99	–3.92
CQI-20	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–8.00	–14.99	–3.50
CQI-21	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–9.00	–15.99	–3.19
CQI-22	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–10.00	–16.99	–2.97
CQI-23	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–11.00	–17.99	–2.79
CQI-24	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–12.00	–18.99	–2.66
CQI-25	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–13.00	–19.99	–2.56
CQI-26	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–14.00	–20.99	–2.48
CQI-27	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–15.00	–21.99	–2.41
CQI-28	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–16.00	–22.99	–2.37
CQI-29	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–17.00	–23.99	–2.33
CQI-30	QPSK (11,12)	–10.00	–12.00	–12.00	–15.00	–10.00	–10.00	–18.00	–24.99	–2.30

Table D-17 OCNS Definition for HSDPA Receiver Testing

Channelization Code at SF=128*	Relative Level setting (dB)*,†
122	0
123	–2
124	–2
125	–4
126	–1
127	–3

* The DPCH Channelization Codes and relative level settings are chosen to simulate a signal with realistic Peak to Average Ratio.

† The relative level setting specified in dB refers only to the relationship between the OCNS channels. The level of the OCNS channels relative to the Ior of the complete signal is a function of the power of the other channels in the signal with the intention that the power of the group of OCNS channels is used to make the total signal add up to 1.

E
Appendix E Description of Radio Performance Test

Open Loop Power E-2
Maximum Output Power E-4
Error Vector Magnitude E-5
Frequency Error E-7
Inner Loop Power E-9
Reference Sensitivity E-13
ACLR DSB E-15
Minimum TX Power E-17

This chapter describes the measurement methods of the RF test items.

Open Loop Power

A mobile phone calculates a propagation loss from the P-CPICH power and CPICH information that are reported from BCCH and determines the first preamble power of PRACH. The Tester only executes one type of measurement, that is; middle (–65.7 dBm). In this case, the mobile phone sends a preamble with the power of –14 dBm ±9 dB and the unit of measurement is dBm.

The Tester Output Level for Open Loop Power can be set at the **Openloop Bs Level** input field on the [Configuration: Test Sequence] screen.

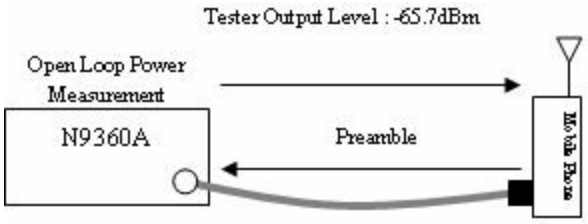

Figure E-1 Open Loop Power Measurement Image

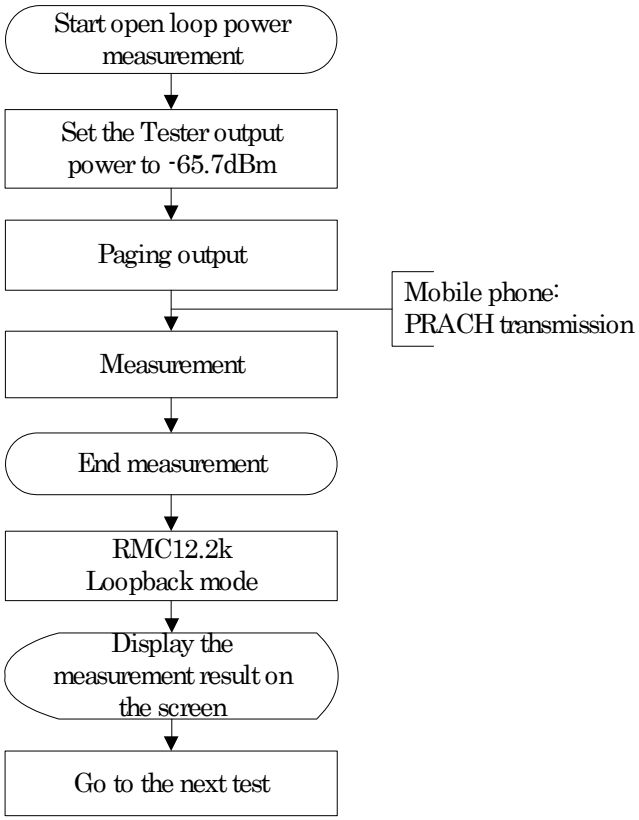
Start open loop power measurement
Set the Tester output power to -65.7dBm
Paging output
Mobile phone: PRACH transmission
Measurement
End measurement
RMC12.2k Loopback mode
Display the measurement result on the screen
Go to the next test

Figure E-2 Open Loop Power Measurement Flow

Maximum Output Power

The Tester controls the output power of the mobile phone to the maximum by transmitting TPC (+1dB) continuously. The Tester measures the output power of the mobile phone at this time and the measurement unit is dBm.

The Tester output level for Maximum Output Power can be set at the **Measurement BS Level** input field on the [Configuration: Test Sequence] screen.

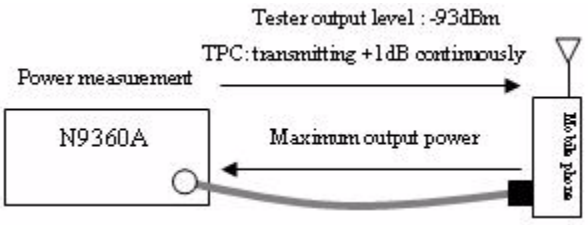

Figure E-3 Maximum Output Power Measurement Image

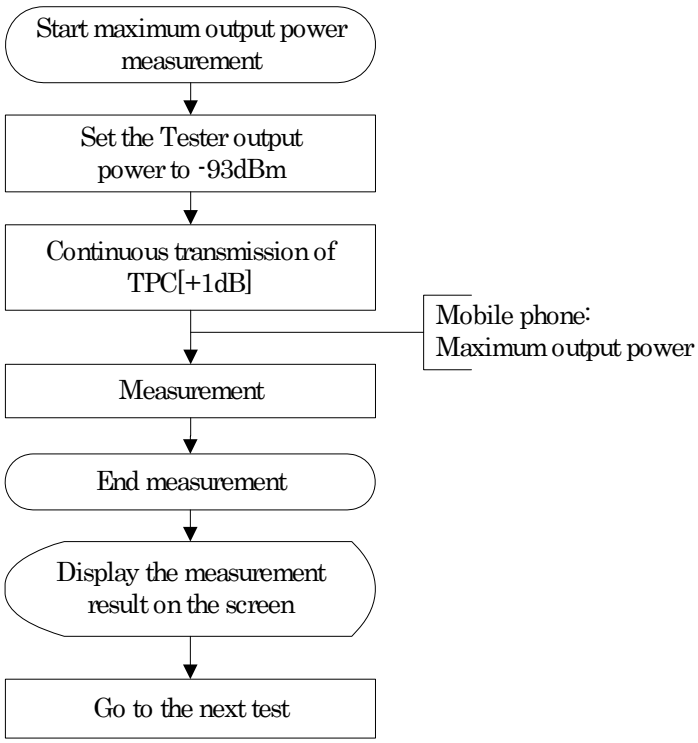
Start maximum output power measurement
Set the Tester output power to -93dBm
Continuous transmission of TPC[+1dB]
Mobile phone: Maximum output power
Measurement
End measurement
Display the measurement result on the screen
Go to the next test

Figure E-4 Maximum Output Power Measurement Flow

Error Vector Magnitude

The Tester controls the maximum output power of the mobile phone by transmitting TPC (+1dB/ Algorithm 1) continuously. The Tester fetches and measures data of one time slot and the measurement unit is %.

The Tester output level for Error Vector Magnitude can be set at the **Measurement BS Level** input field on the [Configuration: Test Sequence] screen.

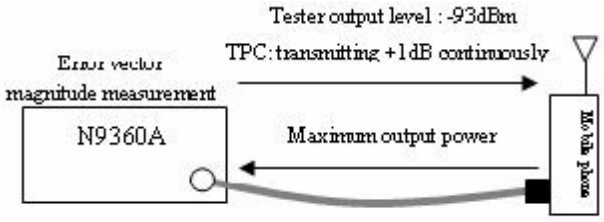

Figure E-5 Error Vector Magnitude Measurement Image

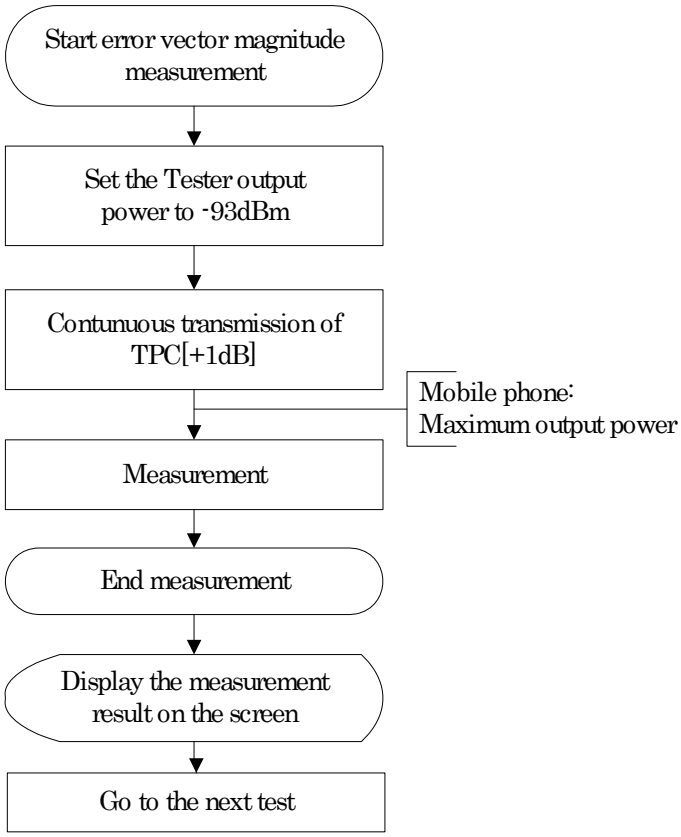
Start error vector magnitude measurement
Set the Tester output power to -93dBm
Contunuous transmission of TPC[+1dB]
Mobile phone: Maximum output power
Measurement
End measurement
Display the measurement result on the screen
Go to the next test

Figure E-6 Error Vector Magnitude Measurement Flow

Frequency Error

In this test, the output level of the Tester is set to –106.7 dBm (can be changed on the [Configuration: Test Condition] screen) and the output of the mobile phone is set to the maximum by transmitting TPC (+1dB) continuously. The Tester measures the output frequency error of the mobile phone at this time and the measurement unit is Hz.

The Tester output level for Frequency Error can be set at the **FreqError BS Level** input field on the [Configuration: Test Sequence] screen.

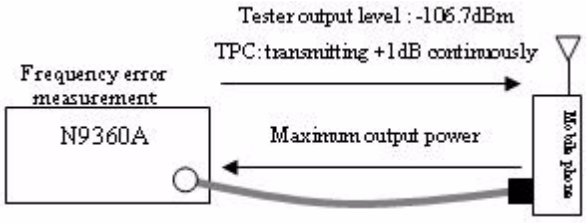

Figure E-7 Frequency Error Measurement Image

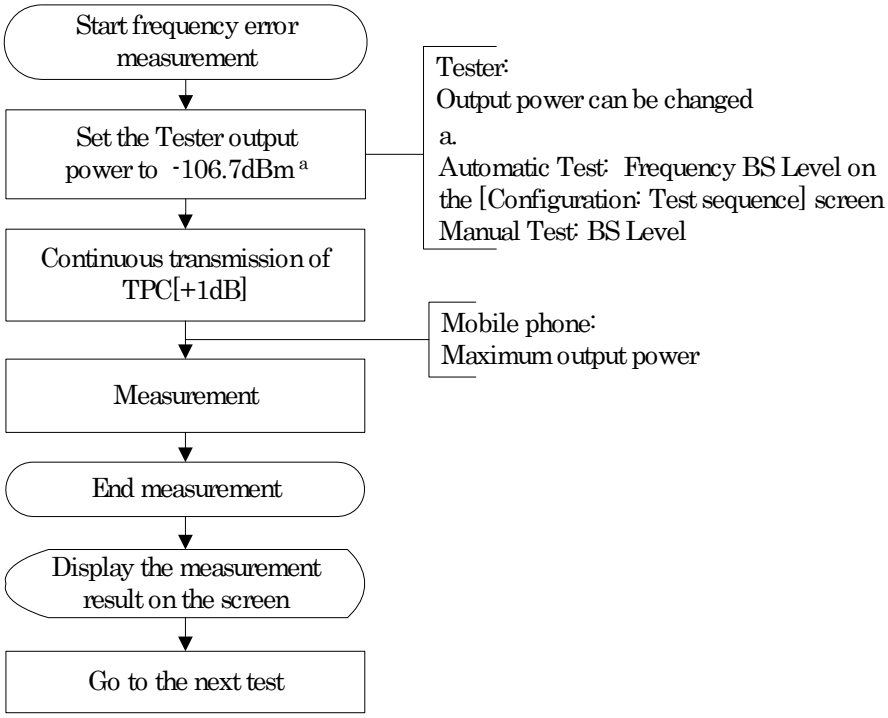
Start frequency error measurement
Set the Tester output power to -106.7dBm a
Continuous transmission of TPC[+1dB]
Measurement
End measurement
Display the measurement result on the screen
Go to the next test
Tester:
Output power can be changed
a.
Automatic Test: Frequency BS Level on the [Configuration: Test sequence] screen
Manual Test: BS Level
Mobile phone:
Maximum output power

Figure E-8 Frequency Error Measurement Flow

Inner Loop Power

This test checks that the mobile phone adjusts the output power according to the TPC command that is received through downlink.

The Tester only executes one type of measurement (1 dB step). Also, the test is executed with a simple pattern, not with a complicated power pattern, due to the purpose of checking output power control according to the TPC command.

The Tester output level for Inner Loop Power can be set at the **Measurement BS Level** input field on the [Configuration: Test Sequence] screen.

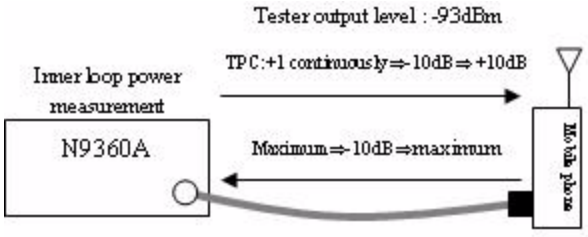

Figure E-9 Inner Loop Power Measurement Image

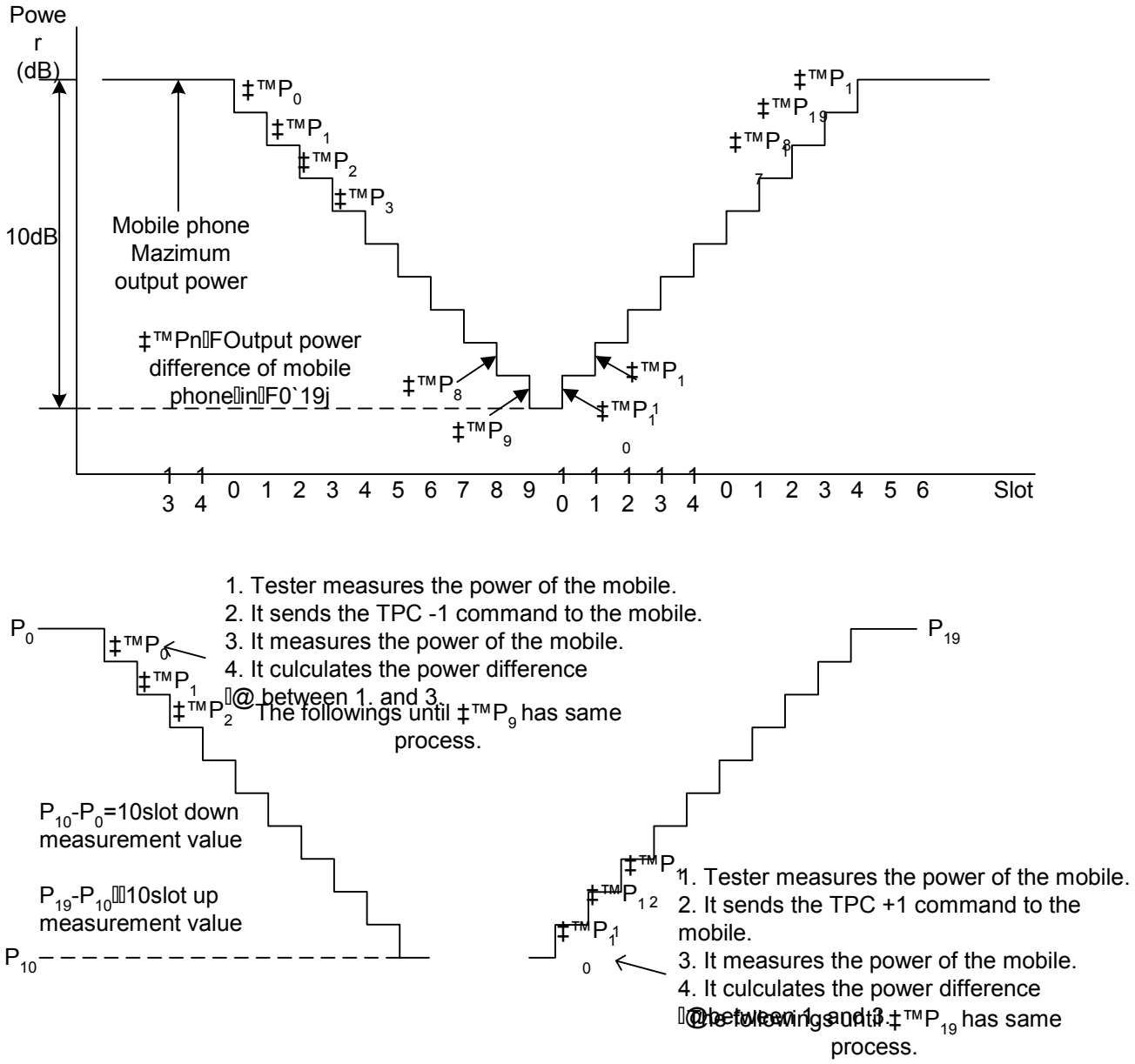

Figure E-10 Inner Loop Power Pattern

When the relationship of ΔP_n in Figure E-10 is as shown in Equation 1 and Equation 2, the measurement result of Inner Loop Power is as shown in Table E-18.

$$| \Delta P_0 | > | \Delta P_1 | > | \Delta P_2 | > ... | \Delta P_8 | > | \Delta P_9 | \quad \textbf{(1)}$$

$$| \Delta P_{10} | > | \Delta P_{11} | > | \Delta P_{12} | > ... | \Delta P_{18} | > | \Delta P_{19} | \quad \textbf{(2)}$$

Table E-18 Measurement Result of Inner Loop Power

Item	Measurement Result [dB]
ILP (Down Min)	ΔP_9
ILP (Down Max)	ΔP_0
ILP (Up Min)	ΔP_{19}
ILP (Up Max)	ΔP_{10}

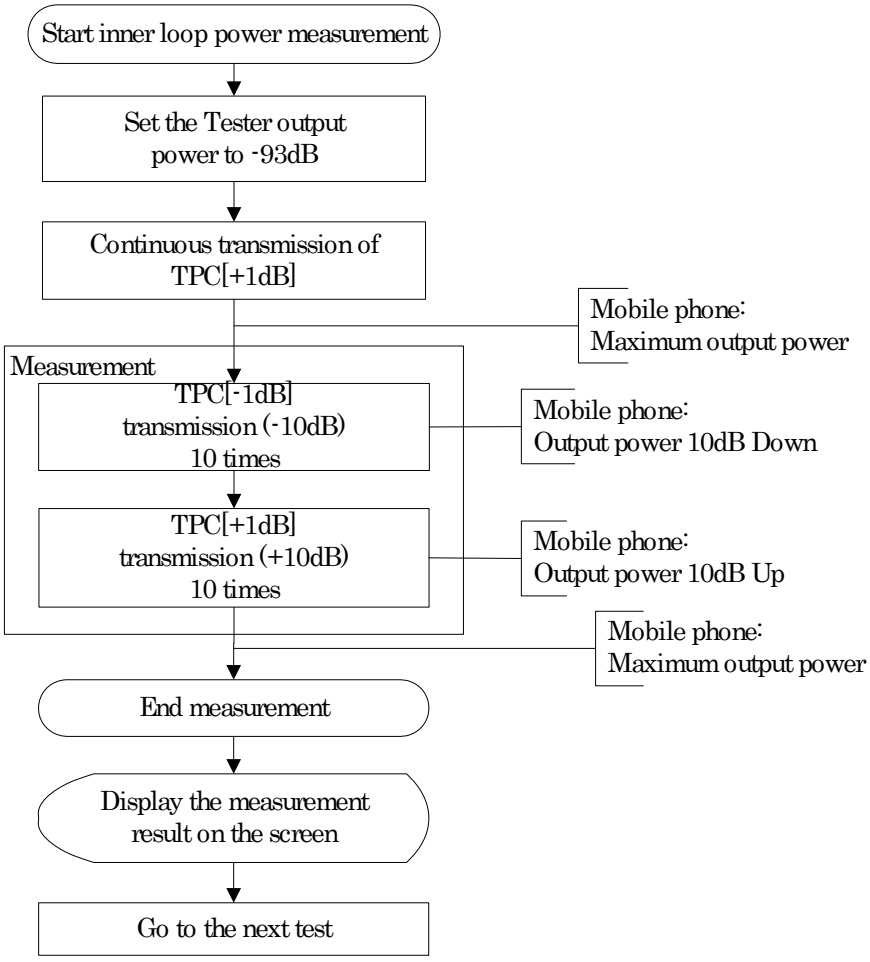
Start inner loop power measurement
Set the Tester output power to -93dB
Continuous transmission of TPC[+1dB]
Mobile phone: Maximum output power
Measurement
TPC[-1dB] transmission (-10dB) 10 times
Mobile phone: Output power 10dB Down
TPC[+1dB] transmission (+10dB) 10 times
Mobile phone: Output power 10dB Up
Mobile phone: Maximum output power
End measurement
Display the measurement result on the screen
Go to the next test

Figure E-11 Inner Loop Power Measurement Flow

Reference Sensitivity

In this test, the output level of the Tester is set to –106.7 dBm (can be changed on the [Configuration: Test Sequence] screen). The Tester measures the Bit Error Ratio (BER) of the mobile phone.

The Tester output level for Reference Sensitivity can be set at the **BER BS Level** input field on the [Configuration: Test Sequence] screen.

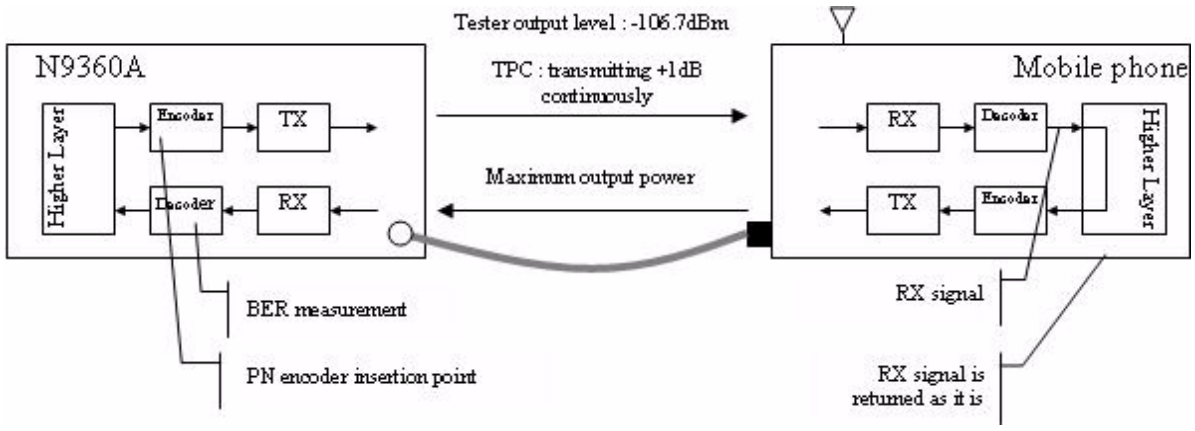

Figure E-12 Reference Sensitivity Measurement Image

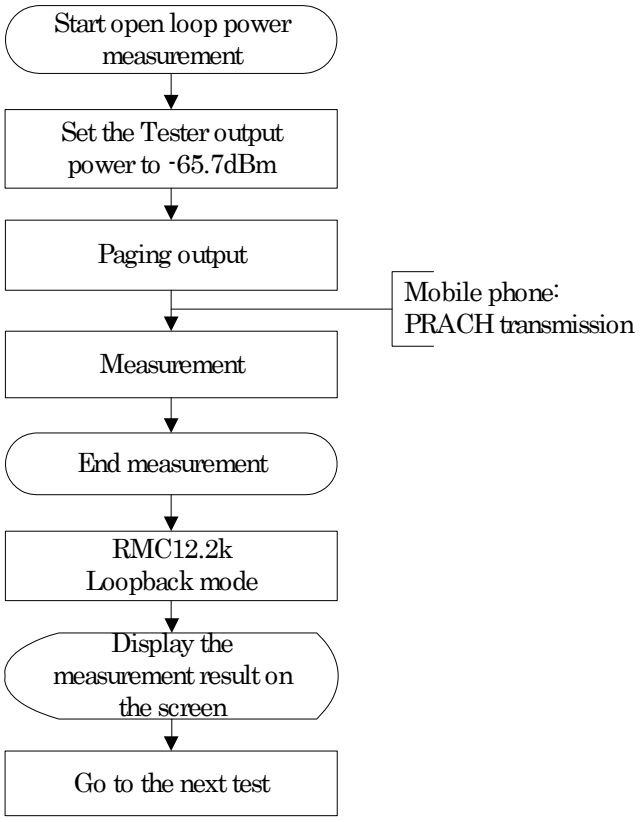
Start open loop power measurement
Set the Tester output power to -65.7dBm
Paging output
Mobile phone: PRACH transmission
Measurement
End measurement
RMC12.2k Loopback mode
Display the measurement result on the screen
Go to the next test

Figure E-13 Reference Sensitivity Measurement Flow

ACLR DSB

ACLR DSB combines the leakage power (P_{lower}) at adjacent channel in lower side band and the leakage power (P_{upper}) at adjacent channel in upper side band, measures that, and calculates the ratio between that and the output channel power (P_0).

$$ACLRDSB = 10\left\{\left(\frac{P_{lower} + P_{upper}}{P_0}\right)\right\}[dB]$$

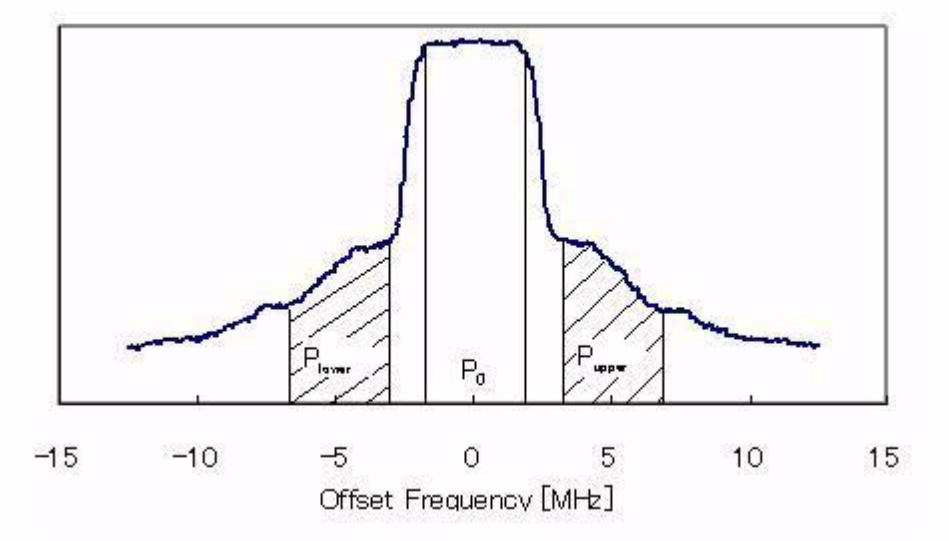

Figure E-14 Measurement Image of ACLR DSB 5MHz

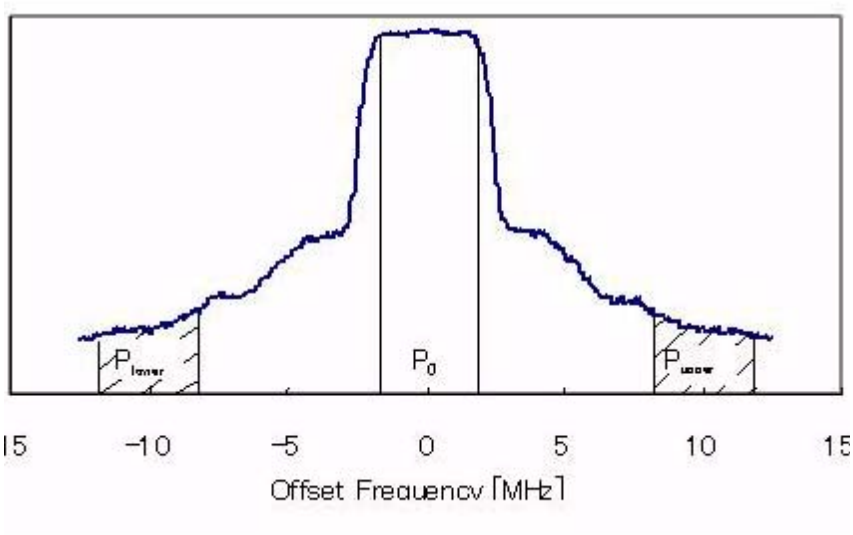

Figure E-15 Measurement Image of ACLR DSB 10MHz

NOTE

ACLR DSB 5 MHz and ACLR DSB 10 MHz sum up the leakage power at adjacent channels in upper side band and lower side band and simultaneously measure them. Therefore, the leakage power in upper side band and lower side band cannot be measured separately.

Minimum TX Power

The tester measures the minimum TX power while it controls the TX power of the mobile phone by outputting the TPC (–1dB) continuously.

The output level at the minimum TX power measurement can be set by **Measurement BS level** on the [Configuration : Test Sequence] screen.

ACLR DSB = 10LOG ((Plower + Pupper)/P0) [dB]

$$ACLRDSB = 10LOG\left\{\left(\frac{P_{lower} + P_{upper}}{P_0}\right)\right\}[dB]$$

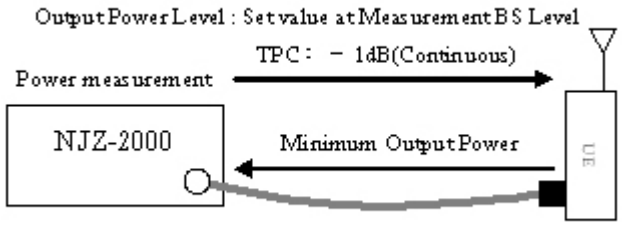

Figure E-16 Minimum TX Power Measurement Image

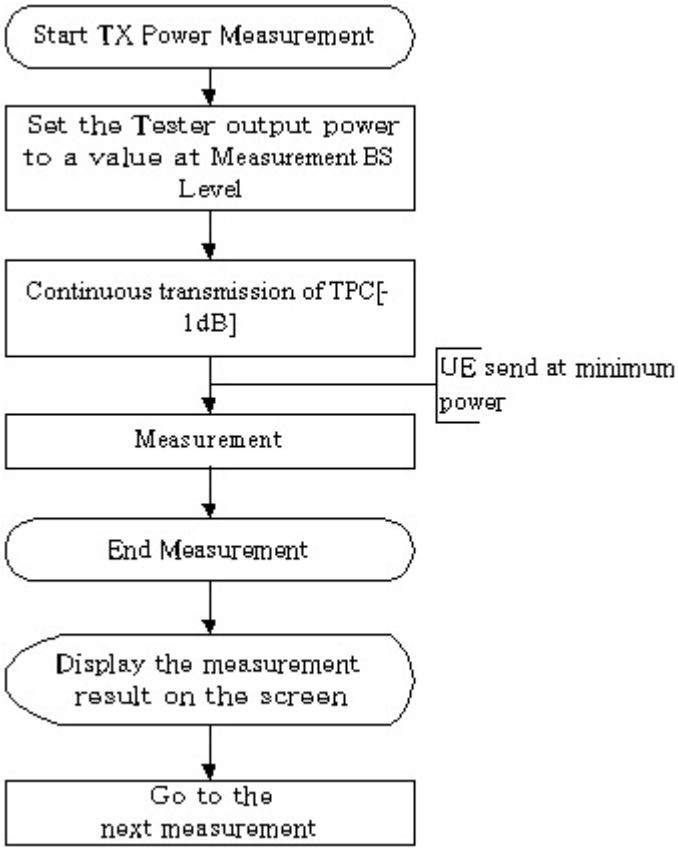
Start TX Power Measurement
Set the Tester output power to a value at Measurement BS Level
Continuous transmission of TPC[-1dB]
UE send at minimum power
Measurement
End Measurement
Display the measurement result on the screen
Go to the next measurement

Figure E-17 Minimum TX Power Measurement Flow